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THIS WEEK'S NEWS

REVIEWING the winning design in the University of Sheffield Competition, Mr. James Burford says it has a merit built on the sure foundation of its mechanical efficiency. "This merit is the capacity to give sheer delight, an aesthetic quality to stimulate emotion by the sheer happiness of the balance and relation of its parts." p. 85

WHITE PAPERS outlining changes proposed in the money resolutions of the Housing Repairs and Rents Bills have been published. p. 139

BIRMINGHAM EDUCATION COMMITTEE have opposed a proposal that its architectural branch should be incorporated within the new city architect's department. p. 140

AN APPEAL against consents granted by the LCC for the proposed erection of two tall buildings on the Albert Embankment, is at present before the Tribunal of Appeal. p. 141

LOOKING FORWARD

FOR the building industry, 1954 opens more auspiciously than any New Year since 1939. A vast new programme of slum-clearance, repair and the rebuilding of blitzed city centres awaits execution, and the hampering restrictions of licensing and timber controls have been loosened. Thus there is the opportunity and an incentive to all sides of the industry. As Mr. Wilfred Horsfall, president of the Employers' Federation puts it in his New Year message to us: "The industry is now about to enter a period in which hard work and wise application of the best principles of competitive enterprise and initiative will bring their own rewards." Implicit in Mr. Horsfall's earlier remarks is the belief that these rewards must extend not to contractors only but to all associated with the work, among whom is the important figure of the building owner.

The main problem facing building remains the reduction of building costs. Contrary to popular belief this is not dependent for its solution only on greater production by the operatives, though this remains the greatest single factor. In degree it depends equally on the efficiency of every link in the constructional chain and on the force of incentive felt by each.

We in the building industry have slipped into a loose way of thinking of incentives as applying only to those members of the industry paid on an hourly rate. It is better to recognise that all branches of the industry need incentives. For some it is money, but for the majority of professional, organising and supervisory men the overriding incentive is that of designing or helping in the creation of a good building, and of keeping their staffs and key men together. A very large number of operatives feel the same thing, expressing themselves through conscientious craftsmanship. The improvement in materials supply and the relaxation of controls referred to should create future conditions in which the word "frustration" should be less often heard.

The aim of the responsible leaders of the industry has so far been directed to stabilising the cost of building. Much success has attended their efforts and materials prices have largely levelled off. It is now time that the whole energies of those leaders were bent towards the reduction of the cost of building to the building owner. The seemingly unending programme of work which stretches down the years must not be allowed to tempt any section or members of the building industry to look on that security as a reason to do nothing about bringing down costs or, in bringing them down, to regard the savings as something that rightfully belong to the industry and in which the building owner need not look to share. The end of that line of thought can only be that buildings remain as paper plans and that a sharp lesson, such as the holding up of Government building works, will be administered. The reluctance of many private developers to begin construction has already been noted.

The industry must continue to strengthen itself at all points—design, management of contracts, supervision, apprenticeship and output. Ranking not less high as an incentive with full employment should be the knowledge that building is the greatest of the social arts, and that the ordinary working man and woman, especially those living in poor conditions, look towards this industry to provide the homes and social and welfare buildings needed. Only uneconomic costs arising out of inefficiency, disinterest, laziness and greed can defeat their hopes, and, by imperilling the future, lead to building unemployment.

All organisations, and every member within them, should look to themselves this New Year and see where they can eliminate weaknesses and strengthen techniques and personal resolve for an all-out assault on high building costs. The start towards better things first noted last year can and must be continued. In the continuance of that encouraging trend we wish every member of the industry success.

THE INDUSTRY LOOKS AT 1954

From the Rt. Hon. Harold Macmillan, PC, MP, Minister of Housing and Local Government

WHEN I first became Minister of Housing two years ago, I often used to say, "Like Oliver Twist, I always seem to be asking for more!" And the building industry and all who have a stake in house building have responded so generously that I have decided to ask once again for an even greater effort.

Two years ago we were told that our aim to build new dwellings at a rate of 300,000 a year was impossible. Well, in 1953, we achieved it. Now the time has come to take up a further challenge—the problem of the slums. They must be pulled down and replaced as quickly as possible, and plans must be made at once.

There are, too, millions of essentially sound houses in the country which only need to be kept in good current repair; and others which should be either improved or converted into convenient modern homes. We have a duty, not only to go on providing new houses, but also to improve conditions for those living in the older houses.

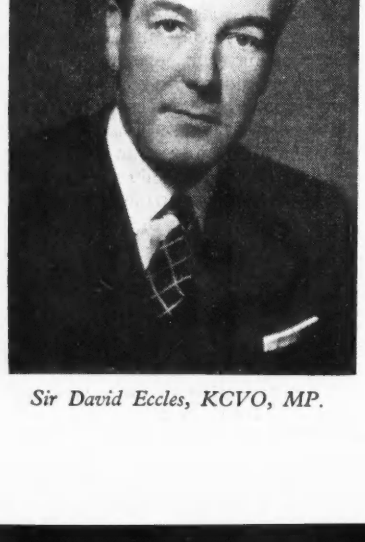
Mr. Harold Macmillan, PC, MP, seen applying a final touch of paint to the last house completed in 1953, at Barnet. Speaking at the ceremony, held on the last day of the Old Year, the Minister said that figures would show that houses in the region of 310,000, had been built in 1953.

By now our aims must be well known to you all. They are a challenge to everybody connected with the building industry—a challenge which I am confident you will all accept. In wishing you a happy and prosperous New Year, may I say that if we can tackle the problems of 1954 with the same spirit of co-operation, energy and skill which helped us to achievement in 1953, then the issue will never be in doubt.

Harold Macmillan

From Sir David Eccles, KCVO, MP, Minister of Works

THE improvement in the supply of building materials and in the output of the building industry gathered momentum in 1953. House building reached and passed the rate of 300,000 a year. Since April licences for industrial building have scarcely ever been refused. We are able therefore to look forward to still more work in 1954, and the end of the timber control should help to reduce costs and promote efficiency.



Sir David Eccles, KCVO, MP.

The new housing policy will mean a better balance between houses to let, houses for sale and flats in the centre of cities. We also hope that the easier conditions for grants for converting and reconditioning old houses will be widely used.

The ball is at the feet of the building industry and the nation expects it to show skill and dash in scoring a record success in the New Year.

David Eccles

From the President RIBA (Mr. Howard Robertson, MC, ARA, SADG)

WHILE wishing that national institution, *The Builder*, a continuation of its apparent youthfulness and vigour during 1954, I wish to mention three matters which I suggest we bear in mind during the coming year.

I have a firm belief in the value of unity in the building industry. The more the various sections understand one another's problems and try to work as a team, not merely on broad questions of policy but on individual jobs, the better it will be for each section, for the industry as a whole and for the nation. Our aim must be to gear our joint efforts to more efficient production. This does not mean I favour what has been termed "packaged service;" I do not. The architect, not the financier, must remain the leader of the team and responsible for spending his client's money and interpreting his needs in the best ways. But I do believe in co-operation and the team spirit.

The industry can best fulfil its duty as the nation's provider of buildings if it is left to itself without interference, however well-meant, from outside. Some of the "interferences" from which we have suffered since the war have recently been removed and something approaching a free market in materials has come again. Unfortunately there must still be some restrictions causing the industry to remain to some extent unbalanced. But if we are given a clear long-term indication of what we have to do, we can produce results quicker and cheaper if the job is left increasingly to us.

I welcome the raising of the licence margin on new small houses and the encouragement to repair obsolescent houses. This field of work is basic to the industry in that normally it is the concern of the young architect and small builder who can expand their practices and businesses from it. I do not want to see building confined to the large, established firms of architects and contractors. But we shall have to make a good job of it and recapture our pre-war ability to produce houses, quickly, cheaply and skilfully designed. We have a great tradition to live up to in what has been termed the smaller English house.

Finally I would like to pay an all-round tribute to the services and value of our architectural Press, and wish to *The Builder* and its sister journals all success in 1954.

From the Chairman, The Quantity Surveyors' Committee, RICS (Mr. E. Harold Palmer, FRICS)

WE enter upon the year 1954 with another advance towards freedom in building. We hope for further progress before the year closes; but high cost is a challenge which still remains.

In the search for means of reducing building costs, architects, builders and operatives in the nature of things have the major contribution to make; but quantity

surveyors have their own part to play in meeting the challenge and they should not hesitate to play it. The beginning of building operations without full pre-constructional planning is a major cause of extra cost. Nobody knows that better than the quantity surveyor, who should do all in his power to bring the point before the promoters of building projects.

The quantity surveyor, moreover, can and should prepare the bill of quantities so as to call attention to the special features of design or construction intended to avoid waste of material, or to lower cost by the use of repetitive elements in construction. His knowledge and skill will often enable him to suggest how this may be done.

There are rumours of new experiments aimed at achieving cheaper building, but let us examine them critically and satisfy outselves that in fact they will do what they set out to do, for an appearance of cheapness may be deceptive.

Once again, as Chairman of the Quantity Surveyors' Committee and on behalf of all chartered quantity surveyors, I wish *The Builder* and its readers all prosperity during the coming year.

From the President of the Institute of Builders (Mr. Harold Ridge, FIOB)

AT this time last year, the need for increased production and lower costs was generally emphasised. As we stand on the threshold of another post-war year, the same insistent demand confronts us all.

The achievement of reaching the 1953 target for dwelling houses has been gratifying to builders and to the Government. Rising costs, however, continue to cause us all great concern. Much has been written and said of the importance of planning, organisation, administration and ability—the ingredients of good management, and all vital to economic building production. Much stress, too, is laid on training for management—rightly so, for heads and key men in this great industry are directly concerned to use forethought and care to avoid delays and waste, and to employ every aid to building practice in its proper place. Efficiency in modern industry demands a high level of general, technical and technological education.

It is therefore a matter of much moment to maintain and improve our means and methods. Spread about the country there are many schools with good courses to which the industry owes a debt it can repay with support. Here it is hoped the continuing influence of the Institute of Builders will assist and strengthen the schools in providing sound and embracing building education.

The building industry has always offered a worthwhile career. To-day and to-morrow it offers a satisfying one in attractive opportunities, enlarging responsibilities and expanding remuneration comparable with the rewards of allied professions. It is my hope that in the coming year there will be a greater awareness among Universities, Colleges and Schools of the appeal of building to adventurous youth, resulting in needed recruitment into a great industry of students of a good standard in education and training. With the continuance of peace—which God preserve !—may 1954 see us much further on the road of recovery and contentment !

From the President of the National Federation of Building Trades Employers (Mr. Wilfred Horsfall)

I WOULD like to extend to all readers of *The Builder* my best wishes for a successful and prosperous New Year. The industry can look back on 1953 with justifiable pride for, as the Prime Minister and the Minister of Housing have said, it has done its job capably and well.

The time is now opportune to remind ourselves of the industry's principal task in 1954 which is, as Mr. Macmillan has said, to build faster and cheaper. We would all agree that in more recent weeks we have been given considerable encouragement by the Government to achieve these ends through the further relaxation of building controls, and we shall not be slow to grasp the opportunities which these decisions make possible. We now have a better chance to plan our work ahead and to strive for the benefits that advance preparation and the proper organisation of building schemes make possible.

As I see it, the cost factor is the primary issue to which we must give our attention. Happily, productivity on the sites is still steadily improving, and I am hoping that the materials manufacturers will be able to keep their output on a rising curve so that time-wasting delays through shortages will be avoided. We shall, of course, also look to the local authorities, the professions and the operatives to play their respective parts. On the other hand, much of the responsibility for building more quickly and more economically rests ultimately with the builder. If, at a time when the national economy is still seriously strained, we are to build faster and cheaper without lowering the quality of our work, we must conserve and use intelligently all the materials we do get ; we must eliminate all forms of waste, both in relation to materials and labour ; and we must not neglect to mechanise in those phases of our operations where such a step is sensible and time-saving.

Earnest efforts in these directions, together with a determination to maintain a strong and skilled labour force through the recruitment and registration of apprentices, are bound, in the long run, to lead to an even higher level of efficiency.

We can look forward to the year ahead confident in the knowledge that the industry is emerging from the most difficult stages of the post-war era. It is now about to enter a period in which hard work and the wise application of the best principles of competitive enterprise and initiative will bring their rewards.

From the General Secretary of the National Federation of Building Trades Operatives (Sir Richard Coppock, CBE)

THE turn of the present year finds the building industry in a hopeful mood from the point of view of prospective activity, for there is still much to be done in the housing (including slum clearance) field, as well as elsewhere. But it would, on the other hand, be idle to deny certain ominous signs about which one would hesitate to be prophetic—prophetic, that is, as to the outcome. I refer to the operatives' present wage claim, which I think may be regarded as one—a major one—of the industry's current problems. It is natural that such a claim, or any claim, should be resisted although we think, equally naturally, that our arguments are unassailable. The continued and steady pursuit of activities by all concerned in the building industry is very necessary for economic progress, but there can be no such progress if a large part of the industry's personnel remains dissatisfied because of the firm belief that its contribution is inadequately rewarded. For my part I hope the building industry can get on with its task unhindered, but this connotes a solution of outstanding grievances. Elsewhere we argue our wage case, and it would be inappropriate for me to do it here. Building by its nature is a constructive industry in every sense of the term and one can but hope that its reputation for peaceful and constructive effort will continue to be justified—a likely enough possibility with the satisfaction of legitimate claims.

I wish prosperity to all *The Builder* readers.

From the President, the Federation of Associations of Specialists and Subcontractors (Mr. F. Woodcock)

I WELCOME once again the opportunity of sending New Year's greetings to all the readers of *The Builder*.

The year that has gone by has been remarkable for the achievement by the industry of a volume of housing construction greater than in any year since the war and more than sufficient handsomely to fulfil within two years of its announcement the Government's housing policy. I should like to have been able to think, however, that the industry had made more progress in solving the many difficulties before it, outstanding among which is a reduction in building costs and, what is necessary to that end, a substantial increase in productivity. I recognise, as we all must, that there has, in fact, been a small increase upon the immediate post-war position : my impression, however, is that in recent months the rate of increase has been very small and that the impetus of the drive to greater productivity, never very great, is falling off. I have always felt that in all discussions on productivity, unfortunately, every man sees quite clearly the shortcomings of others, though he is not nearly so forthcoming about his own potential or actual contribution. I believe it would be a good thing if this year we all made, not a New Year's Resolution—for such resolutions are apt to fade—but a rather more sincere promise to ourselves that we will each of us throughout the year think more of what we can ourselves contribute.

For myself and for the members of our Federation there is the opportunity constantly to improve the planning and organisation of the work, to be open-minded and ready to adopt new methods and new materials where this may be helpful, to

take care that materials are to hand at the right time so that man-hours are not wasted and, above all—and this perhaps needs New Year enthusiasm—to be willing at all times to believe that the other fellow means to be helpful and is doing his best, whatever our own preconceived ideas may be.

The potential work before us can keep the industry busy for a long time. I hope that if we realise this it will not make us less conscientious in our efforts to achieve a continuing programme. My hope is, therefore, that a united effort will be made to increase productivity and to reduce costs, so that we can go on to carry out our duty to the country in a bigger way and release many from the burden of the intolerable conditions in which they live.

From the Chairman of the Building Apprenticeship and Training Council (Sir Frederick Leggett, KBE, CB)

AS Chairman of the Building Apprenticeship and Training Council, I have had the privilege of meeting many apprentices, some of them winners of keenly contested competitions in building skill, and I have been impressed by their personal quality and by their pride in their craft. Uppermost in my mind as this New Year opens is the thought of the very heavy responsibility which rests on all those with whom these apprentices are associated in their work and in their classes. It is they who have the duty of assisting these young men to keep this pride, to maintain the standards at which they aim and to realise that inefficient service is a damage not only to the industry but also to the community. These apprentices have grown up in a time of war and political insecurity, but they have entered an industry which, as a result of the struggles and sacrifices of previous generations, has developed comprehensive joint machinery for the discussion and settlement of the varied problems arising between employers and employed and has largely removed the insecurity of employment and income which formerly characterised it. It is of great importance that, as the future key men in the industry, they will find satisfaction not only in their acquired skill, but also in the self-discipline without which this habit of peaceful relations cannot be maintained.

In the years immediately ahead there will be a greatly reduced number of juveniles available and, if the industry is to attract a sufficient number of those of the quality to meet its needs, there must be a readiness to adapt apprenticeship conditions to accord with modern circumstances. This great industry offers good prospects to those who enter it, not only in this country, but also in other countries in which British building enterprise is playing an increasing part.

The Council has welcomed the transference of the registration of apprentices to the National Joint Apprenticeship Board. It is hoped that all apprentices will have transferred in the near future and that employers will assist them to see the desirability of this step. Our most cordial good wishes for 1954, and especially for a wider scope of building work on which craftsmen and apprentices can exercise their full skill.

WIT AND WISDOM OF 1953

BEFORE the war it was customary in our New Year number to offer to our readers a digest of the small items of wit and wisdom recorded in our columns during the preceding year. In reviving this feature it will be seen that the output of architectural humour during 1953 indicates that the industry can look on the bright side of things.

* * *

The month of January was possibly more notable for its wisdom rather than its wit, perhaps due to an understandable reaction to the frivolities of Christmas. Speaking at the inquiry into the County of London development plan, MR. BRANDON JONES said: "*A garden in London is an asset, not only to its owner but to other people as well. It can only be regarded as wasteful space on the assumption that the maximum number of people should be herded together in one great mass.*" PROFESSOR E. K. WATERHOUSE, in an address to the Birmingham and Five Counties AA, thought that there was a danger that town planners might prove to be the "*Frankensteins of the modern age,*" and a note for builders was given by MR. LEONARD MOSELEY when he advised them to resist that form of building known as "*officially sponsored packages. It may be economical, but it is bad economics. It is not the function of architects to produce die-cast buildings.*" In reply to a discussion following his paper on Education in the Building Industry at the AA, MR. D. E. WOODBINE PARISH said, "*Far too many people imagine that by becoming an architect one becomes a gentleman. I believe that one becomes a gentleman only by a process of rational self-discipline, and I am not at all sure that an architect's training necessarily leads to that type of self-discipline.*"

* * *

In his criticism of the work submitted for the RIBA prizes and studentships, MR. HOWARD V. LOBB, thought that "*the poor foreman, with all the complexities of modern building, has got enough to worry about without having to sort out the pot plants on the constructional drawings.*" Later on in February, at the annual dinner of the Institute of Building, MR. HOWARD ROBERTSON said "*it had sometimes been suggested that there was a barrier between the architect and the builder.*" *He knew of none,* "*except perhaps that the builder had a different kind of motor-car.*" Replying to the toast of the guests at the same function, SIR PHILIP MORRIS said "*The building owner seldom had a car to use, he came to the site on his feet.*"

* * *

In March in the course of an excellent paper entitled "The Future of the Past: Some Thoughts on Preservation," MR. OSBERT LANCASTER said: "*In our present circumstances almost every county in England has five times as many fine eighteenth-century examples alone as can possibly be supported in the conditions to which they are accustomed.*" The architect was likened to the conductor of an orchestra—conducting his own composition, by MR. H. A. R. BINNEY at the Royal Society of Arts. "*There was a time when he conducted a quartette—builder, foreman, craftsman and tradesman—but now he conducts a full symphony orchestra of technical specialists.*"

"*The official architect,*" said MR. RICHARD HENNIKER at the RIBA, "*had a client who was perhaps not quite as articulate regarding successes and failures, and could therefore be relied upon not to complain quite as bitterly as the rather more personal client with whom the private practitioner dealt.*"

* * *

The month of April appears to have been dull but May saw this contribution from SIR PATRICK ABERCROMBIE. "*We should be prepared to live with and enjoy works of art which are not necessarily in the top class and only hope that we do not have to pay too much for the frames.*" In an article at the end of May on the Coronation Decorations, MR. BASIL MARRIOTT said: "*The banks, on the whole, have gone in for some pretty heavy-handed jubilation—some of their decorations suggest the sort of smile that goes with a jocular reference to one's overdraft!*"

At the RIBA Conference in June, the PRESIDENT observed that "*every architect who is guilty of an illiterate or ill-mannered building is driving a nail into the architectural coffin; and ever since science began to outstrip expression the supply of such nails has been all too plentiful.*"

* * *

The apparent lack of wit in the months of July, August and September might well be caused by the industry's humorists being away on holiday. In October that lively wit PROFESSOR THOMAS BODKIN, in a paper on "Local Government and the Fine Arts," said: "*The Council of an important provincial city may well think that an annual budget of £60,000 is justified when the number of attendances at its gallery shows that visitors only cost about three shillings a head. It may be inclined to forget that the larger proportion of those visitors is almost certainly composed of idle children sheltering from the rain, or courting couples on Sunday afternoons.*"

Proposing the toast of the guests at the annual dinner of the Quantity Surveyors' Committee of the RICS in November, MR. G. P. VALE passed some amusing remarks on the quantity surveyor's role in the building industry which he summarised in a parody of Longfellow's "Village Blacksmith" of which the first verse went as follows:

Under a small percentage fee
The humble "twicer" stands.
A pale anaemic man is he
With ink upon his hands,
The shirt upon his puny arms
Gripped by elastic bands.

In an inspiring address on the role of sculpture in art and architecture, MR. SIEGFRIED CHAROUX asked: "*What would be the symbol of our architecture to-day? Would it be a girder garnished with a balance sheet?*"

And so 1953 comes to an end. A year which has had its fair crop of wit and humour.

CORRESPONDENCE

Correspondence will found on p. 135.

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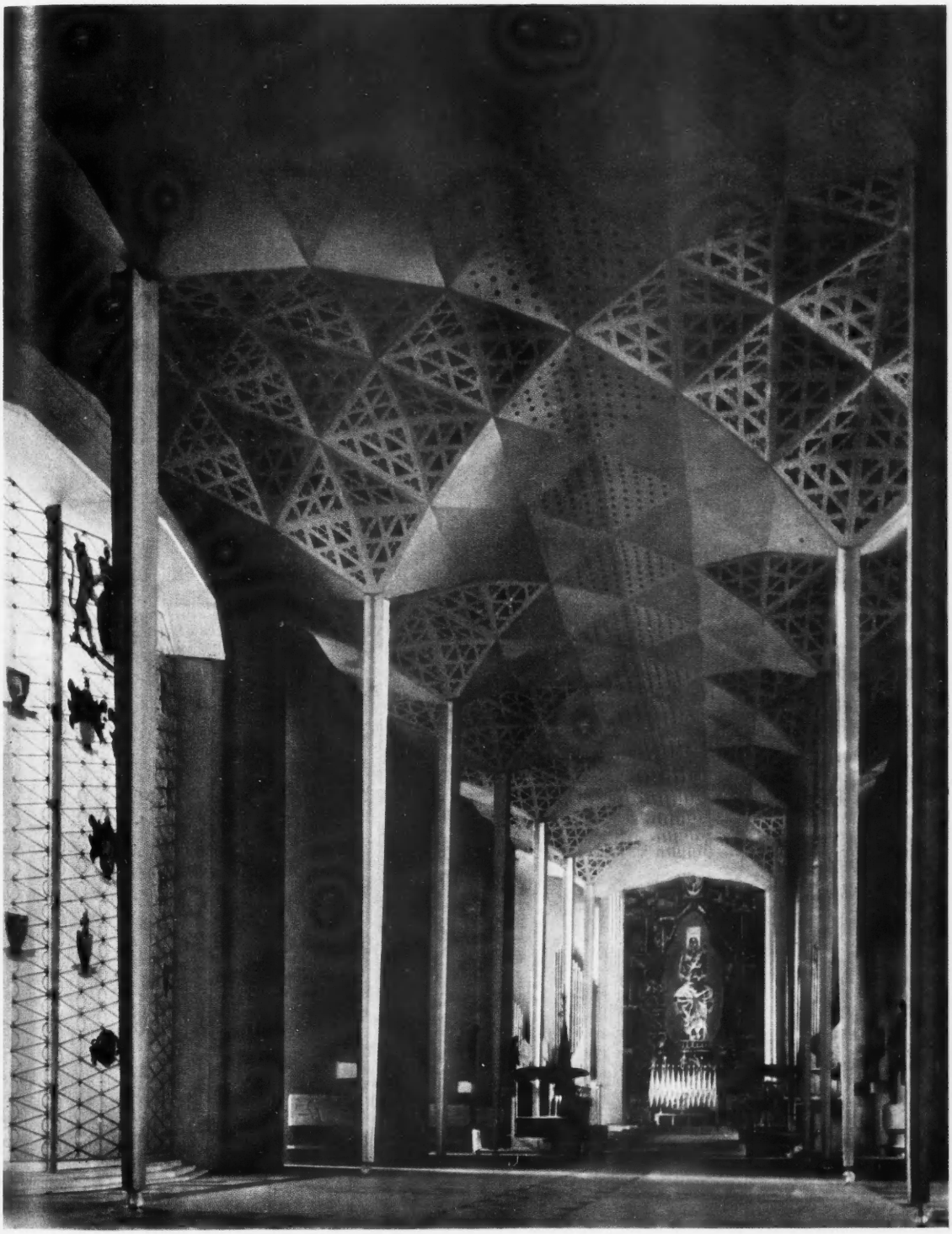


COVENTRY CATHEDRAL. This photograph of the one-quarter inch scale model shows two of the latest alterations to the Cathedral—the setting back of the tapestry wall, allowing the altar to stand free, with the new reredos, and secondly, the piercing of the concrete vaulting, in order to improve the acoustics and permit of artificial lighting. From a photograph coloured by the architect, Mr. Basil Spence, OBE, ARA, ARSA.

"Venus and Vulcan"

THE UNIVERSITY OF SHEFFIELD COMPETITION

By James Burford, FRIBA, AMTPI

THE premiated designs in the Sheffield University Competition, now on exhibition at the RIBA, pose a question which many of us are asking, a question which is raised by many buildings and designs for buildings at the present day. The size and importance of the scheme we are considering here make that question the more insistent : Where, architecturally, are we going ; what, architecturally, are we trying to say ?

The layout plan of the winning design, by Messrs. Gollins, Melvin, Ward and Partners, is masterly. It has a clarity, an efficiency, a simplicity combined with an ever-changing interest, which is wholly admirable. It has that quality of inevitability, it reaches that point of logical finality, where the alteration or removal of any single part—with one exception—would be a profanation. And this, too, has been achieved within a framework of existing buildings which, taken with the unhelpful and blankly staring spaces on the site plan of existing conditions, by no means suggests the dispositions which have been achieved.

BALANCE OF PARTS

But to my mind, this layout plan has a merit which goes beyond and behind its logic, a merit built on the sure foundation of its mechanical efficiency. This merit is the capacity to give sheer delight, an æsthetic quality, to stimulate emotion by the sheer happiness of the balance and relation of its parts. It has the perfections of a fine Persian carpet and more, since this quality is carried over into the masses of the third dimension, like the interplay of the lights and shadows, the voids and solids, of some masterpiece of sculpture, moving and weaving within the controlling framework of a broad serenity.

After that purple passage may I come to the one exception which I briefly noticed. That exception is the placing and planning of the department of Architecture. I may be fanciful, but I thought there was something in the presentation of the drawings which suggested that the authors themselves were not quite sure about that Architecture department. There seems no reason, unless I have missed it, for this block being just where it is. It spoils the precincts of the old University building, it blocks the light to the back of the Administration, and, if I may say so without too much offence, is a kind of semi-underground garage, not a pleasant place in itself. Now whilst the Medical department has been so well done by, it does seem hard that Architecture should be so treated. I am not saying that the comparison may not be a true reflection of the current regard paid to these two professions, but why accept it, submit to it, and perpetuate it ? May I proffer one suggestion ? Toplight is not essential to architects' studios and there is vacant ground in the south-east corner of the site. A rectangular block, of suitable height, in this south-east corner, with the architects inside it, might be a valuable addition, rounding off the unity of the scheme.

That is one definite criticism and one definite suggestion. The rest of what I should like to say resolves itself, for the most part, into a series of critical questions.

In the first place I find it very difficult to understand how it is that designers who reached so high a level of attainment in the general layout of the site and who, above all, imbued it with so high a quality of æsthetic satisfaction should, apparently, be content with an internal and detailed planning of the various buildings which, it seems, never rises beyond the purely mechanical and utilitarian. The answer revolves, of course, on the view you take of a University. Is a University merely a machine to work in, or is it not ? Are we merely to go through the motions of a University education or are there more real, if more elusive, conditions to be fulfilled ? Do the benefits of academic study follow of their own accord on the provision of space for lecture rooms, laboratories, and the storage of books ? Or is there something to be said for the idea, or am I old-fashioned and reactionary in thinking that there might be, of reciprocity between the abstract and the concrete within the buildings as well as out, as it were some answering geniality from the surrounding walls ? Is a University a place where you prepare for earning a living or where you prepare for a way of life ? What becomes of the universal if the humanities are left out ? An answer to these questions may suggest what the inside of a University building should be like. Lest I be misunderstood (to too great a degree) let me say that what I am implying here is not the question of allusion, certainly not of historical allusion, but the question of humanism, of the outlook or attitude of mind which should be reflected or expressed. However, with the possible exception of the access to the Library, which seems involved and restricted, it all works. I am only asking : Is that enough ?

Leaving the insides and turning to the outsides I have said already that the masses of the various buildings which go to make this group are admirably counterbalanced and interchanged. High, low and middle are reciprocal in the three-dimensional pattern of design. Each block is in itself decisive in its simplicity. And each building in itself bears an inescapable likeness to many another building designed for totally different uses. Had I been told that the Library was a turbine house and the Arts building for the Secretariat of the United Nations, I should not have been in the least surprised. Is this family likeness between buildings of different purposes a good thing or a bad ? It has been deplored. Are we to have the same dress for all occasions ? The question that this really puts is, I think, have we a Style ? Perhaps no, not quite, but something, for better or worse, rather like it. We are all very familiar, there is no escape, with the nineteenth-century quick-change artists of the architectural profession. You know what I mean, Gothic for churches, Classic for town halls, Tudor for rural retreats. In the eighteenth century these versatile gentlemen were not prominent. In the Middle Ages they scarcely appear. There was no need. There was a Style. Architecture was architecture, not fancy dress. If we have a Manner to-day, then how does that Manner compare in interest, in vitality, in humanism, with a Style ? The question is, perhaps not what Manner, but what quality of Manner.

My few remaining questions come down to details, perhaps not the less pertinent for that. I rather wondered why the main façades should be covered entirely, windows or no windows, with glass. Is it really practicable ? It has been done before and the labour of cleaning it was almost continuous. Again, why the authors' reluctance, as their report admits, to show the units of the cladding on the unwindowed walls. After striving for a simple statement of truth, how strange (or is it natural ?) to yearn for a slight deception. And I was puzzled by the occasional odd little bits here and there of—may I say ?—trivial decoration, as though the designers, in fleeting moments, had lost faith in the monumentality of their design. But these are carping questions, minor points which detract not at all from the purpose and the power of a grand conception.

OTHER DESIGNS

The second premiated entry, by Messrs. Jenkinson and Jenkinson, presents an able and workable layout plan which, however, lacks that quality of incisive clarity which distinguishes the winning design. The placing of the large lecture rooms is unfortunate in relation to existing buildings and, in connection with the new building, overpowering—a clear case of the tail wagging the dog. The elevational treatment is for the most part unnecessarily heavy and pedestrian. Some of the internal planning has produced shapes of an unconvincing irregularity.

The third premiated design, by Mr. H. T. Seward, of Messrs. Cruickshank and Seward, with some admirable parts, taken by themselves, is inclined to congestion in the general layout and notably in the arrangements for the parking of cars. But the Library building, in particular, is an excellent piece of design. To my mind, it is by far the most attractive Library of the three schemes which are here discussed. But one Library will not make a University and the qualities which distinguish this single unit are unfortunately not maintained throughout.

In reviewing the premiated designs I am more inclined to learn than qualified to teach. Perhaps the answers to the questions I have put, and those answers will be various, and the thoughts on the reflections I have made, and they may be wide, will make some little contribution to that first question which I said originally this competition raised.

TRENDS IN DESIGN, 1954

THE marked progress made in the past two years in the direction of relaxation of controls over licensing and building materials means greater freedom for the architect in the design of buildings. While the need for efficiency and economy still remains, these essentials should better spring from this freedom. In the following articles, design trends in Factories, Hospitals, Prefabrication, Housing, Educational Buildings and Office Buildings, are traced.

FACTORIES

NEED TO STUDY INDUSTRIAL TECHNOLOGY

THERE are few, if any, clearly discernible trends in the design of factories in Britain. Despite the present emphasis on productivity and the growing realisation of the importance of environment on output, the factors that govern the form and appearance of such buildings remain uncoordinated and undefined.

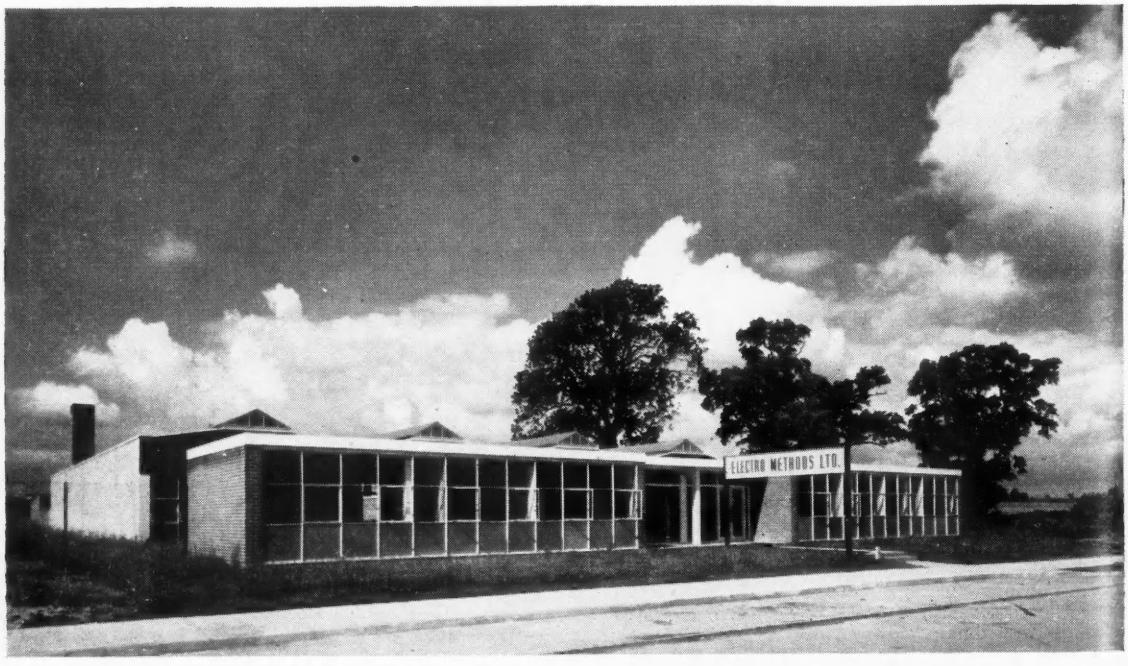
Cyril Mardall, ARIBA.

We must here distinguish between the tailor-made industrial buildings made to suit specific processes, and the general-purpose standard factory for smaller scale processing and assembly, which is the subject of this brief article. There is a wealth of information available as a result of experiment and study by such bodies as the Building Research Station, the Ministry of Works and others, yet it is difficult to formulate the basic requirements which should govern the performance standards we need for structure and services. It is even more difficult at present for the industrialists to agree on common basic requirements. Costs vary from £2 to £4 per square foot, and the Factories Act and other HMSO publications are not drawn up for the purpose of evaluating the desirable economic norms.

It is likely that the future trend in planning will be towards a greatly simplified adaptable standard factory of more uniform grid, using lightweight tubular or lattice girders for the larger unit and precast concrete for the smaller ones. The structure will probably be clad in aluminium or other sheeting, backed with insulating material with brick or block walls below cill height. Services will run overhead to give greater flexibility and adaptability.

Production areas will be kept clear of obstructions, and lavatories, canteens, etc., may be placed at mezzanine levels or connected with the adjoining administration block. It is unlikely that the multi-storey factory will ever play a significant part in industrial development. Ideally, factories should be planned for expansion in three directions, but the resultant wastage in roads and services may outweigh the advantage of such extreme flexibility. The trend is for the road frontage to be fully developed with open space at the rear for expansion, stacking or recreation. The siting must finally depend on local conditions.

Speed of construction is beginning to play an increasingly important part in industrial development, and here again a high degree of standardisation and intelligent co-ordination both on the drawing board and on the site is essential. The sectional factory at Stevenage in precast concrete here illustrated was built in seven months, which is well below the average building time on this side of the Atlantic. In view of the fact that the amortised capital expenditure on the structure only represents on an average some three to five per



Standard factory, Stevenage New Town. Chief Architect: D. P. Reay, ARIBA, AMTPI; Deputy Chief Architect: L. G. Vincent, ARIBA, Dip.TP; Senior Architect in charge: L. W. Aked, BArch, ARIBA.

cent. of the total production costs, too much emphasis on economy in first costs is wrong. The difference in cost between a minimum and a reasonable standard of comfort is so small in terms of annual expenditure, that the resultant increase in productivity outweigh other considerations.

STRUCTURE

William Allen in a lecture at the RIBA in January, 1953, outlined the trends in American factory building, and one naturally looks to the US for comparison, as the most highly industrialised country in the world. Over there the trend is for the highest practicable degree of adaptability, for adequate height—at least 18 ft. below trusses ; adequate bay sizes up to 40 ft. by 80 ft. or even 100 ft. ; and a roof system capable of taking reasonable hung loads at any given point. The roof trusses in the form of standardised flat steel trusses are from 6 ft. to 8 ft. deep, and the weight of steel between 12 and 16 lb. per sq. ft. of area.

Probably the difference in the cost ratio of materials to labour, as well as a period of steel shortages, has tended to make us follow a different pattern. The tendency over here is undoubtedly towards prefabrication and standardisation, but the lattice girder or geodetic space frame is a more likely development. Precast or prestressed concrete members are likely to replace *in situ* shell concrete because of speedier construction and greater flexibility. It is more difficult to suspend gear from a shell roof, and there are obvious difficulties of piercing the roof for future vents or ducts. The trend at present is for economy in height, sometimes not more than 11 ft. clear with no allowance for overhead cranes, and consequently a lower density of machines.

DAY-LIGHTING AND ARTIFICIAL LIGHT

There is as yet no sign of natural lighting for industrial buildings being replaced by artificial lighting, which, according to Mr. Allen, is happening in the US, and the trend is further to provide some low-level vision strip fenestration for psychological reasons. The north light is becoming a thing of the past ; it was abandoned in the US some 25–30 years ago, because the source of light from one direction creates serious working difficulties.

The BRS monitor, used for the first time in the Sigmund Pumps factory in Newcastle, appears to provide the most satisfactory form of roof lighting in that it gives an even distribution of light with a blend of north and south light with practically vertical glass surfaces for cleanliness. The direction of the monitor bay is preferably east-west with a slope on the monitor roof giving a preponderance of north light (Fig. 1).

It is important to consider accessibility for cleaning because, unless the glass can be cleaned frequently, it is of no practical value. Wherever air pollution is not a problem low-pitched patent glazing appears to be satisfactory, and excessive sunlight can be dealt with by coating the glass. An interesting form of roof lighting is the combination of patent glazing

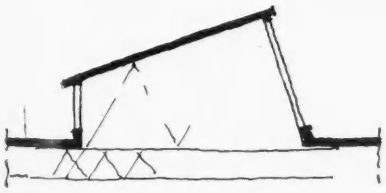


Fig. 1

Fig. 2

Standard factory, Stevenage New Town : elevation to yard.

with triangular space frames as in the Duxford factory designed by Ove Arup and Partners. The glazing on two sides of the triangle meets at the apex, and roof decking is suspended between the bases of adjacent space frames (Fig. 2).

The BRS have done a lot of research on the intensity, distribution and types of artificial lighting, as well as blending of fluorescent and filament lighting for psychological reasons. The trend is, of course, for filament lighting to be almost wholly replaced by fluorescent lighting. It is important to allow one-tenth to one-quarter of the light to be directed upwards to avoid glare, and this can be done simply by perforating the fittings, which incidentally keeps them cleaner and the lamps cooler. There is thus no noticeable loss in operating efficiency.

To a great extent artificial lighting must remain a tenant's fixture or requirement in a standard factory, and the important point is to provide the means of a simple suspension and flexible distribution, and this equally applies to power. A high percentage of industrial accidents is caused by shadow and glare as a result of bad lighting.

HEATING AND VENTILATING : COLOUR

Controlled ventilation, even some measure of air-conditioning, is the trend in factory planning. Instead of relying on air changes through the opening of doors and windows, fans and controllable louvres are being installed. More attention is being paid to dust collection within the building, and this also applies to the boiler house where an increase in the use of low-grade fuels in the form of fines makes the installation of special stokers and screens important. The trend is also to concentrate convectors into larger units, and the high-temperature radiator panel is sometimes replacing the unit heater. For obvious reasons more attention is being paid to thermal insulation, yet it is too often that first costs are allowed to influence the design of the shell.

The colour scheme plays an increasingly important part in the design of the contemporary factory, and although many manufacturers—and unfortunately some architects—are still wedded to the idea of a preponderance of cream and green, one frequently finds a highly successful colour scheme. The basis of an effective colour scheme is usually the standard colours for services as laid down in the BSS No. 167, 1942, the use of which simplifies identification.

In conclusion I cannot do better than quote William Allen in his lecture where he said : " We should aim to increase in every way studies of industrial technology, because a sound policy of industrial building design can be one of our best contributions to national productive efficiency." Architects should further aim to convey this information to the clients, possibly by concise, well-tabulated and illustrated bulletins or manuals.

CYRIL MARDALL

HOSPITALS

THE PLACE OF THE POLYCLINIC

TIME's old reaper gathers few credits for achievements in the hospital world in Britain during the past year and bows to the immutable law of nature that you reap very little if you sow nothing. It is perhaps a cruel reflection of the times that the Minister of Health in his recent handbook "Hospital Building Operations" accords the highest priority to the provision of new accommodation for mental and mentally deficient patients; if the statistics of patients in this category awaiting treatment mean anything, they will inevitably mean that the period of make-do-and-mend for general hospitals is to be still further prolonged.

S. E. T. Cusdin, OBE, ARIBA, AADip.

It is perhaps credible that, after a period of 15 years, hospital administrators, doctors, nurses and architects still preserve an enthusiastic interest in hospital planning. This enthusiasm has had to be ventilated in the conference halls, in discussion amongst themselves and in odd competitions overseas, and has caused teeth to be ground in envy at the many opportunities which have been taken by their colleagues in neutral countries overseas and in the USA to build new hospitals. Little, however, has been resolved; many of the old familiar problems await a fresh opportunity to test the judgment and skill of all concerned.

The situation to-day is not unlike that which confronted the Cambridge professor of history who, when asked to summarise the present time, stood on his head and said to his audience: "This expresses the state of Britain to-day." Even the most fervent optimist would endorse this view, as there are so many strange contradictions that to forecast trends would mean that one believed in the unlikely theory of all fervent optimists, that every cloud has a silver lining.

AT A DISADVANTAGE

Compared with the Government's housing or the schools programmes, the problem of planning hospitals begins at an immediate disadvantage. For houses and schools there exists a classification which is recognised at the political, financial and planning levels. In the hospital world, on the other hand, a general hospital can mean practically anything in size, in the division of its accommodation, and the facilities it is offering to its patients, the medical and nursing staff. One of the greatest needs is such a classification. This does not necessarily mean abandoning the time-honoured names of many of our famous institutions, but that the importance, the capacity and facilities offered to the patient should be known by its title.

The new Health Act gave us the regions of activity, and it seems to be a comparatively easy matter to get agreement to sub-titles to the existing names of hospitals which would clearly identify its type. The USA titles of Regional Hospital, District Hospital and Health Centre have the virtue of simplicity, which should not be overlooked.

CLASSIFICATION NEEDED

By providing different types of hospital each with a recognised function and capacity; by maintaining channels of communication between all types; and by the proper grouping of patients and transfer of patients from one hospital to another, it is possible to ensure that no patient receives a more expensive treatment than his condition warrants, and that none is denied the facilities to any form of treatment which his condition requires.

Reckoning hospital requirements on the basis of the old formula of 10 beds per thousand of population is fast becoming an economic burden and beyond the resources of most countries. In comparatively rich ones like the United States of America, Switzerland and Sweden, the drain on manpower alone (and in particular attracting sufficient nurses to maintain the nursing services) has become an urgent problem, and most hospitals will have a waiting list for in-patients, in spite of the ratio of beds per thousand of population being within the prescribed limits.

The researches to overcome this major problem have been concentrated on the examination of the condition of the patient to gain admission into hospital and to examine further other ways of dealing with the minor sick and disabled, and the elderly patient who is not desperately ill, but in need of sympathetic nursing in less specialised institutions. It is becoming clear that the need for hospital treatment will have to be measured to an even greater extent by the economic yardstick, and the organisation and administration re-orientated to some degree so that a larger number of patients can be treated for the same effort by the nursing and medical staffs.

CREATING EFFICIENCY

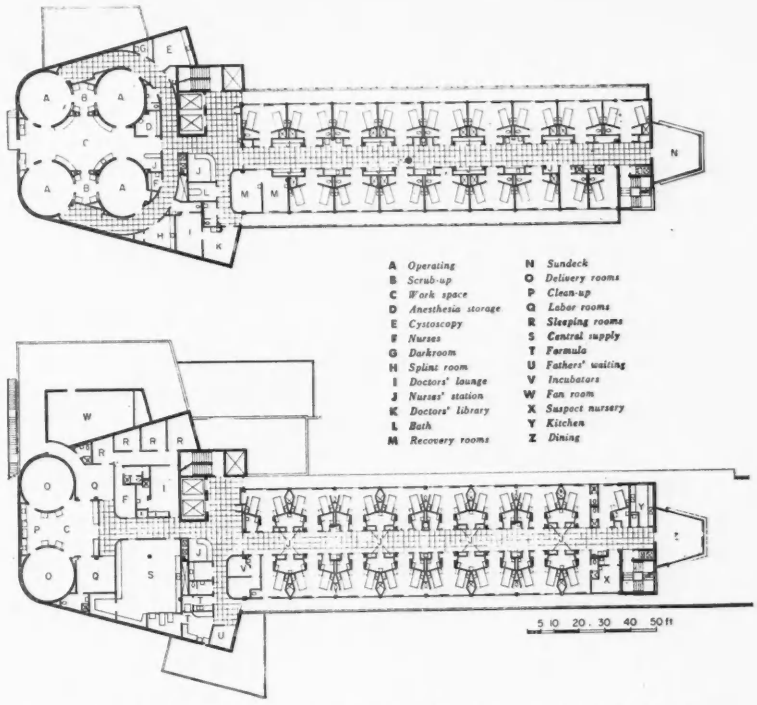
Obviously, one way to increase efficiency would be to improve the accommodation in which they work. We suffer perhaps unduly from the fact that so many of our hospitals have outlived their useful life and can only be occupied at great expense in the running costs. What, then, is to become of our obsolete buildings in Britain? How much good money can be spent on bad buildings before economy would dictate a more drastic treatment? These problems are obviously occupying the politicians and Civil Servants responsible for ensuring under the National Health Act that an efficient hospital service is at the command of all citizens at a reasonable cost to the taxpayers.

On the question of the size of a large general hospital there is a growing consensus of opinion that its size should be limited to a maximum of 850 beds. A hospital of this size

Kaiser Foundation Hospital, Los Angeles: the central "work corridor." Architects: Wolff and Phillips.

cannot satisfy all the conflicting views and interests of those concerned. For a Dean of a Medical Faculty the amount of material to run an efficient medical school will be limited unless he has call upon a large number of associated institutions and a considerable out-patients' department. For the consultant doctors within the hospital it is probably too large to ensure day-to-day consultations about difficult cases, and the special diagnostic and treatment departments will be too large for economic and efficient administration. Even at 850 beds the catering problem and general housekeeping requirements will tend to be unmanageable. For the individual patient it is still an enormous institution which will tend to make him feel that he is just a number in the machine. Yet, with all these points in mind, the need of some institution of this size, and larger, is proven time and time again by the results of the original research which they are able to foster, and the high standards of nursing and treatment which well-run institutions of this size have as their unchallengeable record.

If regional planning became a reality, the smaller and specialised hospitals need no longer be scaled-down models of the larger ones, but could be designed to increase the efficiency in their new and prescribed functions, perhaps with special emphasis in the planning to reduce the nursing staff to a minimum by the introduction of facilities to allow patients to do more for themselves.



Kaiser Foundation Hospital, Los Angeles. Top : Plan of operating rooms. Below : Plan of delivery floor.

From the problems of the wider field, the two which concern us as individuals more intimately are the in-patient and out-patient departments of the hospital. The controversy on principles underlying their planning and design still persists. If we examine the recent discussions at home and the examples abroad on the size of the ward unit and, in particular, the size of individual wards, there is no common agreement here. There are many who will agree with the report of the Nuffield Provincial Hospitals Trust that the limiting of a ward unit to 25 beds for a general ward is too small and that its nursing complement can be more efficiently organised in a ward unit of 36 beds.

In America, where nursing is organised on an entirely different basis, even a larger unit is in common use, but in Zurich the recently completed Kantonsspital shows steadfast adherence to the multiple of 24. (See plan, p. 90.)

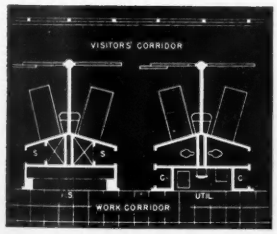
If we look for any common factor in the American examples it could best be summarised in the examination of the Kaiser Foundation's West Coast hospitals. The basic factor here is a highly concentrated treatment for the shortest possible time when, presumably, " out you go." The Zurich plan is not so revolutionary, and with the Swiss native genius for organisation and discipline this hospital will remain for a long time one of the best in Europe.

The demonstration plan produced by the Nuffield Provincial Hospitals Trust was adventurous, and requires the acceptance of changes in organisation and routine by the nursing staff before its success can be measured ; it is interesting that at least two of the Regional Hospital Boards have accepted the challenge and are to experiment with this type. The plan is on page 90.

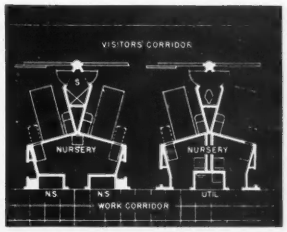
As far as the ward itself is concerned, the four-bedded ward is a popular unit—one almost might say the maximum acceptable size—in the United States, but in Sweden and Switzerland efforts have been made to increase this number to six and eight, whilst here in Britain there is hope of a new conception where the patients will live in a bigger space, but at the same time enjoy the privacy of smaller rooms.

" *POLYCLINICS* "

Professor Vines, in his book published last year on " Background to Hospital Planning," provides the arguments which might lead planners to solve certain of the hospital problems by the establishment of " polyclinics." This is a poor word with a curiously un-English connotation and used here only for lack of a better one to describe a department where the ambulant and not desperately ill or disabled patients can

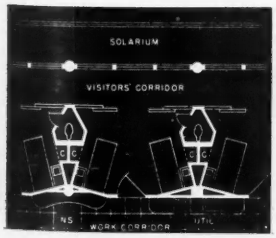


Typical room plans. *Los Angeles: nursing layout shows corridor niches. (Compare below.)*

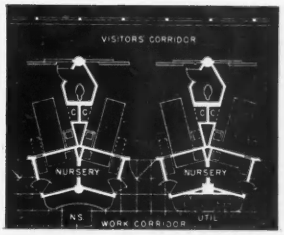


Los Angeles: Maternity-floor layout shows neat planning for bassinet-drawer scheme.

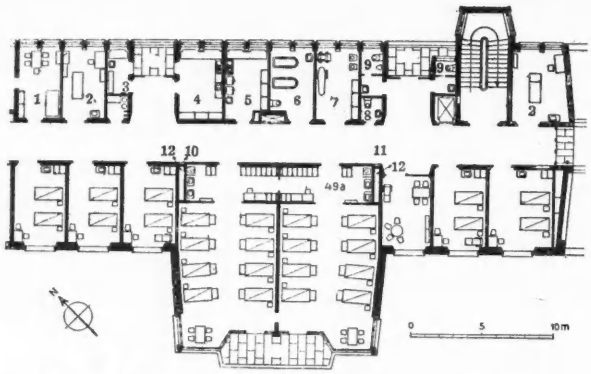
San Francisco: Refined version takes floor facilities out of niches, omits room showers.



San Francisco: Refined version has private nurseries, more toilets, fewer showers.



Comparison of room plans between the Kaiser Foundation Hospitals at Los Angeles (above) and San Francisco (below.)



KEY TO PLAN OF TYPICAL NURSING UNIT, KANTONSSPITAL, ZURICH

1. Sister's Room
2. Exam. Room
3. Flowers
4. Kitchen
5. Servery
6. Bathroom
7. Equip. Store
8. Staff w.c.
9. Patients' w.c.
10. Signal lights
11. Telephone
12. Vent. duct

attend, and at any one session be subjected to a full range of diagnosis and possibly be given minor treatments.

On the face of it the provision of a fully equipped "poly-clinic" (which might in itself be a slightly more expensive type of building) would deal with more patients per annum than the equivalent area of building designed for in-patients.

Much sympathy can be extended to the Minister of Health and his staff who, during the difficult period of the acquisition of hospitals and the establishment of the new services have had, in addition, financial problems of great magnitude to consider. The resistance to demands for new building has been in turn sympathetically enforced, but even so some encouragement is now due. Bold, imaginative action could create a new spirit worthy of the high tradition of British medicine and the medical and nursing staff who have laboured so hard to build its reputation.

We look then, to time's progeny to cast aside the banner of expediency which has heralded so many of his forebears, and we should love him more if he lived long enough to sow a seed or two. Few of us would mind if one of them were a wild oat!

S. E. T. CUSDIN

PREFABRICATION

STANDARDISATION OF THE SMALL UNIT

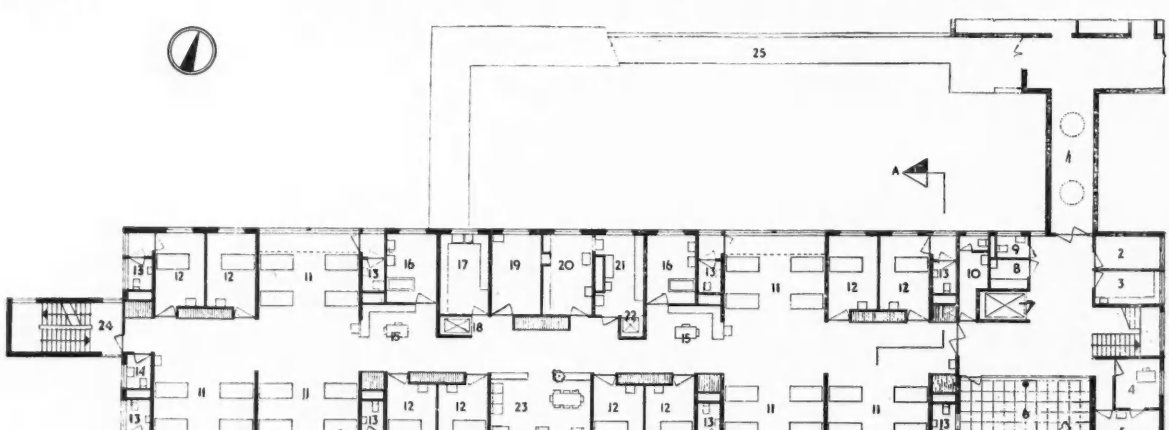
THE AIM

THE economic impetus behind the development of prefabrication since the end of the war has produced a remarkable volume of achievement in several fields; in exports, local authority housing and schools. This year, for instance, a section of BIF will again be devoted exclusively to prefabricated export types, not, after all, a surprising development when an industry has raised its annual exports from £80,000 to £7,000,000 in five years. Such was the enthusiasm that an official export target of no less than £100m. has been put forward, a target that, if achieved, will make this industry one of the two or three top maintainers of our economy. When the figures for last year's trading are produced, disappointment may be felt, for the sudden shutting down in 1952 of the Australian imports brought the industry up against the fact that 70 per cent. of all its eggs were in the one basket.

D. Dex Harrison, FRIBA, AMTPI.

HARDENING MARKETS

Prefabricators have now found, along with other exporters, that the honeymoon days are over and they are having to reorientate their outlook to an export market which has fundamentally hardened and to customers whose demands are perceptibly stiffening. This is not at all a bad thing, for, undoubtedly, the umbrella of a seller's market has sheltered much that is still inferior, particularly so in the matter of design. Too much prefabrication still bears the stamp of the war-time hutments from which it sprang, and the world is heartily sick of encampments.



KEY

1. Corridor link with main hospital
2. Store room (Doctors' room on first floor)
3. Laboratory
4. Interview room
5. Sisters' room
6. Loggia
7. Bed lift
8. Cleaner
9. Visitors' and doctors' toilet room
10. Nurses' toilet and locker room
11. Four-bed ward
12. Single-bed ward
13. Patients' toilet room
14. Nurses' toilet room
15. Nurses' station
16. Bath and wash room
17. Kitchen
18. Supply lift
19. Treatment room
20. Clean utility room
21. Dirty utility room
22. Disposal lift
23. Day space
24. Escape stair
25. Service ramp to lift rooms in basement.

Plan of Hospital Ward Unit, Greenock, by Nuffield Provincial Hospitals Trust.

That the market is coming, gradually, to require a better class of product can be illustrated by looking at the United States, where 60,000 prefabricated dwellings are now sold per year. The percentage of the 8,000–12,000 dollar class has risen during the last two years from 30 per cent. to 60 per cent. and in the over 12,000 dollar class from 3 per cent. to 15 per cent. This breaking into a field that has hitherto been the prerogative of traditional building symptomises the gradual acceptance of factory techniques as being the equal of traditional building methods and shows that the slur smeared over the industry by the inferior standards of the immediate post-war products is being slowly obliterated.

One of the most heartening aspects of BIF lay in the number of new designs which were coming forward in answer to these new requirements, and we can look forward, I think, to export buildings of ever-better quality and performance.

There is a corollary in the improvement in living standards which is taking place in every country in the world. Prefabrication makes its contribution in a reduction of man-hours spent upon a given amount of accommodation, thus freeing labour for other production tasks and thereby aiding the general wealth of the community. In the more backward countries this is especially important in the effort to free them from the chains of absolute poverty. The difficulty here is often that native labour can build its own accommodation at such a low level of cost, measured in terms of money, but at such a high level of cost in terms of man-hours that the poverty-chain cannot easily be broken.

Prefabricators are thus, on the one hand, working upwards into better quality markets and on the other working down in an endeavour to gain a vast market where no market now exists and at the same time to fulfil a dire social need. Solutions are gradually being found which provide answers to this great problem, sometimes in the form of simple site prefabrication using local materials and sometimes by providing basic frame, window and door elements which can then be completed by the natives themselves.

STABLE HOME MARKET NEEDED

In this country prefabricated dwellings have been confined almost entirely to local authority schemes, but now that licensing restrictions have been eased there is undoubtedly a market awaiting in private houses for purchase, and BIF indicated that there were designs available to satisfy the most exacting needs in this field, capable of being erected singly or in small groups and with a very wide range of individuality indeed. Many of these at present are based mainly on timber techniques, because timber lends itself more readily to flexibility in design and use. There exists, however, in this country one insuperable barrier, for Building Society mortgages are withheld from any but traditional constructions in brick or stone.

Let us consider the implications of this fact. It means that better-class houses cannot be produced for sale in this country, despite the existence of a market and a willingness to produce, and it means, therefore, that the export industry is deprived of a home market for its better products. It is always held to be an axim that no export trade can flourish without a secure home market in which to test out its wares and to act as a buffer in times of crisis, and export housing is no exception in this respect. It also means that the exporter is faced with the impossible task of explaining away to his customer why his goods cannot find a sale in his own country. Is it because they are inferior to the traditional product? Why, then, should he be asked to accept them? This is a discouragement which his competitor from Sweden or Austria does not have to face, for he can point proudly to a ready sale to his own discriminating countrymen.

Building Societies have grown up to fulfil a definite function; they are purely and simply interested in finance and not at all in technique as such. Nor are they interested in exports. They have a ready market for all the money they can find without, as they view the matter, taking up a problematic risk.

A FINANCIAL BARRIER

There exists a gap, therefore, which no one has any direct incentive to fill but which, if not filled, may well put our £100m. export target into the realm of wishful thinking. The necessary apparatus and funds are almost certainly already in existence, if they could but be suitably deployed, and inasmuch as any mortgages issued would be fully covered, it would not cost anyone a penny piece to get this gap as well filled as it is already in, say, Canada or the United States. Nevertheless, since private finance is unwilling, it becomes a Government responsibility to act, and I put this forward as the biggest help the Government could give in sustenance of this lusty but tender export infant.

This better-class market will demand higher standards of design and a greater flexibility to meet the customer's varied needs. That the desired standards can be attained has been proved conclusively in the school building programme, where the newer methods are satisfying varied and exacting demands in buildings of quality, and proving that greater flexibility of design is quite feasible, provided the correct initial approach to the problem is made.

Herein lies the significance of the modular approach, for it is primarily by development of co-ordinated sizes that flexibility is being attained. In no sphere has this country demonstrated its technical superiority more ably than in its lead in dimensional co-ordination, and so great has been the interest displayed in this field that a new society devoted exclusively to furthering this project, the Modular Society, has now been established. In so far as we can maintain this lead our exports will surely prosper.

A WORLD LEAD

In this respect we are now far ahead of the United States, who were our mentors. Indeed, the States, despite the size of their prefabricated industry, have lagged woefully in design and new techniques, and their whole trade at present is entirely internal. This, too, is our opportunity. That is not to say that an easy entry to the US market is to be expected. On the contrary, US prefabricators have expended their energies rather in taking a standard type of timber construction and reducing it to terms of factory line production. They have undoubtedly, by these means, got their costs down to a remarkable degree, so much so that the traditional product has been warned that it will have to mend its ways if it is to stay in the field. Those prefabricators here who have aimed at the British domestic market have, each in his own way, followed the same general line of standardising and simplifying one or two basic types and relying on enormous numbers of identical units to make the thing pay.

To conclude, I feel that this approach, though undoubtedly valid in the economic sense, is a dead end. There are indications, as I have tried to point out, that the opposite approach—that of standardising the small unit rather than the complete building, with consequent additional flexibility—is steadily gaining ground. The formation of the modular catalogue which is, in my opinion, the chief practical contribution which the Modular Society can make to building technique, will undoubtedly give a new impetus to our attack upon this basic problem and, if it succeeds, help to keep this country in the forefront of building technique. To finish by a quotation from le Corbusier "It must be made possible for prefabrication to be taken up spontaneously, individually, in isolation, in any place in the world."

D. DEX HARRISON

EDUCATIONAL BUILDING

THE PLACE OF PREFABRICATION

MISS FLORENCE HORSBRUGH, the Minister of Education, is reported as having said that one child in seven in this country is in a new school. This is undoubtedly a great achievement but—let us face the facts—it means that six out of seven of the school population are in obsolete and unsatisfactory buildings not in conformity with the Butler Act of 1944.

Howard V. Lobb, CBE, FRIBA.

The condition of the 6/7ths of the schools was the subject of a detailed examination during this year when the Select Committee issued their Eighth Report. They report as having found themselves faced with a most disquieting situation, at every point confronted with overcrowding, lack of schools, heavy transport costs, and often rapidly deteriorating and even dangerous school buildings. New schools, they comment, were often overcrowded from the day they were opened, make-shift classrooms and other accommodation in hired halls throughout the country taking the place of the properly designed and thoroughly efficient schools. The Report goes on to say quite categorically that the school building programme cannot be completed unless 50 per cent. of the schools are built by prefabricated methods, and the evidence submitted to the Select Committee overwhelmingly supports this view.

PREFABRICATION

Is this, then, to be the trend of educational building in these next critical years? The bulge in the school population, we are told, reaches its maximum in 1958 and the Ministry of Education have said it is expected to reach the 50 per cent. mark of prefabricated construction within the next two or three years. They have pointed out that there are already several systems on the market and that four others are being developed by the Ministry in collaboration with local authorities and manufacturers.

It is somewhat surprising that this view has aroused such little interest in the technical Press and that no attempt has been made to question the arguments advanced in favour of prefabrication. The Select Committee report makes it quite clear that, in their view, this system is no cheaper in cost, neither do they give any overwhelming evidence of a saving in time of construction as compared with a rationalised traditional construction properly organised, whereas the whole problem of maintenance costs and the wider educational view of the lighter forms of construction which result from prefabrication are not known.

The most important point on this discussion—which is not made clear in the Select Committee report or in any subsequent statements of the Ministry—is whether the Government will increase the annual capital allocation to Education on a pro rata basis to the increase in the number of schools built by prefabricated methods. If authorities are to benefit from the use of prefabricated methods and thereby accelerate their building programmes, they must surely be granted larger allocations of capital expenditure to meet an increased rate of building. Unless a definite undertaking can be given that some such provision will be made, it is quite obvious that the use of alternative methods will not produce the desired results.

In a field of design and planning where independence and individual initiative of the client have played and can play such an important part, the acceptance of some of the modern trends (such as the dual use of different sections of the building, the omission of dining halls, and other similar items) are bound to be criticised, but architects and the building industry should be indeed grateful to the Architects' and Building Branch, and in particular the Development Group, of the Ministry of Education which undoubtedly has put this country in the forefront of educational building, though the inability of this Branch to put over prefabrication in its proper perspective and related to the total building work authorised by the Ministry is perhaps a legitimate criticism. The failure also to adjust the cost per place to the increased cost of building or alternatively persuading the specialists and HM Inspectors to eliminate, if only for the time being, some of the present requirements of the Building Regulations is resulting in reversion to the 1860 School Board of London type of planning, where the classrooms open off the assembly hall and where circulation through classrooms, assembly hall and other units of the school will undoubtedly cause disturbance in teaching.

Such is the pressure of educational accommodation on the limited budget that the architect is often forced to abandon those principles which were underlined as a result of the *News Chronicle* Schools Competition in 1937 for example, adequate natural light, cross ventilation in classrooms, etc. In a number of schemes recently illustrated it is doubtful if more than lip service is paid to the regulation requirement of 2 per cent. daylight factor, particularly when one bears in mind that plans of two or three years ago only just made the grade. It seems to me, therefore, that it would be preferable to amend the regulation rather than bring it into disrepute.

On such a vast problem so closely related to both national and local expenditure it is difficult to look into the future. I was surprised recently to hear from a Director of Education in quite a large County Borough in the north of England that a particular primary school then nearing completion would cost the borough a 2d. rate purely for the heating, cleaning, and maintenance of the building. Many authorities are wondering how they are going to be able to pay their part of the cost of running the buildings, quite apart from the capital expenditure involved.

LOCAL AUTHORITIES' ATTITUDE

I think, however, it is clearly evident that the authorities are not prepared to embark on an experiment of the use of prefabricated construction unless and until they have a definite undertaking as to whether or not this is in addition to the normal allocation they have for school building, and without this no benefit can accrue to education. If the Minister is unable to obtain larger allocations of capital expenditure, no increase in school building will be possible, unless costs can be reduced.

It is somewhat surprising that the Select Committee in the evidence they had gave so little attention to those authorities which have been building schools by traditional methods at lower costs and in approximately the same time as prefabricated constructions. I wonder if it would not be prudent for the Development Group to give some serious study to the utilisation of the more normal products of the building industry and make a comparison of the man-hours (both on site and in the factory) of the respective systems, taking into account, if possible, the running costs and subsequent maintenance?

In the interval, school building must obviously go on but I hope with some regard for the humanities, utilising where possible the work of our brother artists, and with every attempt to build in scale with the child—who should always be regarded as the school architect's client.

HOWARD V. LOBB

HOUSING

INFLUENCE OF HOUSING MANUALS ON INITIATIVE

DURING the past year we have reached the Minister of Housing's target rate of 300,000 houses per annum, and with this increased rate of production, together with the relaxation of some controls, it is interesting to look back into 1953 and attempt an assessment of the effect these and other factors have had on the design, construction and layout of housing development.

Geoffrey Hopkinson, BArch, ARIBA, AMTPI.

Following the rapid rise in cost of materials during 1951 we saw a steadying of prices in 1952, and statistics so far available indicate that the prices have continued generally at a steady level throughout 1953, with, if anything, a slight fall. This, however, has been offset by rises in labour and transport costs, and although total costs have steadied, they have done so at a very high level and consequently the need to economise has again been uppermost in the minds of all involved in planning and design. Efforts in this connection have mainly been based on the new Model By-laws and on the recommendations made in "Houses 1952," effects of which were not seen until 1953.

HOUSE DESIGN

In the introduction to "Houses 1952" it is stated that "the problem is to balance the need to preserve essential housing standards with the need to reduce capital costs and rents." To a great extent, housing authorities have probably followed the advice given in the form of new house plans, and it would be interesting to investigate resultant costs and standards. Any estimated cost reductions have been offset to some extent by fluctuations and by the continued high loan interest rate which, in spite of the adjustment of October, 1953, still stands higher than in 1951.

INGENIOUS PLANS

At the beginning of 1953 the majority of people concerned with this problem were agreed that a reduction in standards was necessary, but there were wide differences of opinion as to which standards should be reduced and by how much. The substitution of the "aggregate living space" minimum for the minimum total house area was a step in the right direction, encouraging architects to devise ingenious space-saving plans and giving a full reward in financial saving to those who succeeded.

The less orthodox plans illustrated in "Houses 1952" achieved a total reduction of floor area mainly by the combination of circulation and accommodation units. Thus we had the "Dining-Hall" and the "Large Living Room" plans. It was stated that they were already popular in Canada and the USA. Central heating, however, is taken for granted as an essential requirement in almost any house in those countries, and "Houses 1952" rightly pointed out that in comparing the cost of those houses with that of the orthodox type the cost of heating installation and fuel must be taken into account. It is to be hoped that those houses which have been built to these plans have had adequate heating installed in them, but there are some examples, and there may be many more, where the family has its meals in the living-room instead of in the dining-hall so as to avoid the discomfort and draughts. The result in actual day-to-day use is a normal living-dining-room plan-type, but with an enlarged hall which is a waste of space and a living-dining-room which is too small. The same sort of thing has happened in some of the "large living room" house types, where the stairs rise from the living-room and the hall is reduced to a small lobby. In these cases, where the heating is inadequate, the living-room will have become extremely uncomfortable in winter.

For these reasons, and because there is strong support for the conventional or orthodox plan, it is probably true to say that there has been little change in the plans of houses in 1953 except for some reduction in circulation space. Where the open plans have been adopted, together with adequate heating, improvements have resulted, but where heating has not been adequate there has been a marked lowering of amenity standards.

During the last few years there has been a noticeable standardisation in the general external appearance of low-cost or mass produced housing. Throughout one large contract when, to a great extent, mass production methods are necessary and where a large number of houses have to be produced from a relatively small number of type plans, it is expected that a uniformity and similarity of appearance will run through the scheme. Properly handled, and with an intelligent layout, this is not necessarily a fault. It is unfortunate, however, that almost identical elevations are found in other schemes and the standardisation in general appearance mentioned above refers to this fact. As one travels about the country one not only sees a great similarity in the separate housing estates of one town, but also in many developments throughout the country. There are, of course, several factors contributing to this result. All the house plans are approximately the same size, and because two-storey houses appear to meet the needs of the people more adequately and conveniently than other forms, the houses are of the same height. When they are built in terraces to approximately the same densities, it follows that the general form of all schemes will be similar. Nevertheless, it should be possible in the design of elevations and the selection of materials to achieve much

Houses for old people, Kings Heath Estate, Northampton. J. Lewis Womersley, ARIBA, AMTPI, Architect.

more individual character than is evident at present, and thus avoid this national standardisation.

One wonders to what extent the excellent Housing Manual and its later supplements have influenced this problem. They were issued as a guide, not as an instruction, and they have undoubtedly raised the lower levels of design and layout. Housing authorities, however, have become so accustomed to measuring everything by Ministry standards that, provided their house plans conform to the latest Ministry recommendations and provided full advantage has been taken of suggested means of economy, they are satisfied. If the resulting average rent is lower than that of the next housing authority so much the better. In some cases the appearance of the individual buildings seems to mean very little, and the fact that the overall scheme has no individual character does not seem to matter at all.

Thus, whilst the influence of the Manual has raised the lowest level of planning and design, one wonders whether it has, at the same time, stifled initiative and enterprise in the design of the houses themselves. It would appear that there has been a levelling process whereby those authorities whose designs were below the average have raised their standards and those who might have been above average have been content to achieve the general level which most people considered satisfactory.

This has been more noticeable perhaps in 1953, and it is to be hoped that more diversity of character will be achieved in the housing schemes throughout the country in 1954.

HOUSE CONSTRUCTION

Shortage of some materials, still longer delivery periods, increased costs of facing bricks and some partitioning materials—all these factors have had their influence in construction methods. Generally, however, these have remained much the same as before, and one may hope that an improvement in structural standards will be possible some day. Since space standards adopted some years ago have been largely retained, the economy drive has been focused on construction and on the use of substitute materials. The results have not always been satisfactory. The quality of roof tiles, facing bricks, and rainwater goods; the size of timber sections (as well as the quality of the timber itself); the quality of construction in sub-structures—in all these matters there is plenty of opportunity for the wise spending of more capital if and when it becomes available.

Standards of construction of roads and pavements and of street lighting and other civil engineering works remain substantially at the same relatively high level of previous years, and it would seem that we have taken far too much out of the structural quality of the house itself, whilst leaving its ancillary works untouched.

LAYOUT

There has been a marked increase during 1953 in the average density of housing schemes. The 1952 publication of "The Density of Residential Areas" emphasised the need for more compact layout, and the Minister has followed this with "Houses 1953" which shows how housing densities can be increased. As a result of adopting higher densities, layouts have generally been improved and where, in addition, an increased urban character has been achieved, the improvement is most marked. (It does not always follow that higher density means urban character.) The conventional, or corridor, street layout still remains popular, and by avoiding regular building lines and too much incidental open space, some very satisfactory schemes have been developed, particularly where a mixture of one-, two- and three-storey houses with blocks of flats has been intelligently handled.

Proposed housing, Bracknell New Town. E. A. Ferriby, BArch, ARIBA, Chief Architect.

Attempts on less orthodox lines appear to have been few in number during the year, but "Houses 1953" may encourage others to follow the pioneers of the "Radburn" and of the double-footpath-access types of layout. It is to be hoped that adequate methods of fencing and screening back gardens will be employed and that sufficient money will be available for landscaping. Otherwise the views of backs and the general untidiness, particularly in the double-footpath-access layout, will produce anything but a satisfactory street picture. It is difficult to understand how an urban character is to be obtained by this system of layout if it is designed on the principles illustrated in the 1953 supplement.

FLATS

In the layout of flats there is evidence of a more conscious attempt to achieve interest by grouping elements of different heights on an irregular plan, thus avoiding the fault of earlier examples where parallel blocks of similar height produced uninspiring schemes. In the planning of the individual flats, there have been no marked changes. The need to economise has produced compact planning with space standards much the same as in previous years. We still await, however, the complete answer to the problem of refuse disposal.

Design in general appears to have maintained an average standard, the few attempts at originality having mixed results. The struggle to get away from the "barrack block" appearance and to emphasise the domestic scale of the small unit has led to some interesting elevations, and this, together with the use of different materials, may lead in time to a general improvement.

PRIVATE HOUSES

More opportunity has been given to the private developer, and in general it would seem that the private builder who is developing a housing estate is doing so on almost precisely the same lines as he did before 1940. There is very little evidence of the speculative builder having read any publication on the subject of housing since the war, and he continues to build the "3 bed–2 recep–semi," for which there is obviously a ready sale.

In the case of individual houses built under private licence there have been some very interesting examples illustrated in the Press during the year, and it is here that we see the open plan intelligently used. A strong American influence is noticeable, particularly in the single-storey dwelling.

GEOFFREY HOPKINSON

OFFICE BUILDINGS

THE PLACE OF THE LIGHT AND ELEGANT

FOR some time it has been evident that new office buildings, particularly in London, are going to be bigger than they were before the war. The available sites are likely to be larger, owing to the clearance caused by war damage, and the buildings themselves will in many more cases form island blocks instead of smaller developments between adjoining buildings.

A surprising amount of this sort of building has already been done, including many Government-sponsored schemes, but in looking at these it is very hard to find any definite advance in design technique, as in most cases the familiar pre-war form of perimeter plan has been used and Classical ornament has been the order of the day.

These buildings have as a result attracted much architectural criticism on the ground that they are bulky and oppressive, and it has become fashionable, not, as one might expect, to blame their designers but to attack the promoters, on the ground that they have demanded more than their fair share of floor space.

It would be a more constructive approach to accept that if this sort of development is to continue, the promoter must have a reasonable return for his money ; and it is the architect's problem to give him the size of building he wants without detriment to the amenity of its surroundings. Although this may lead to higher and unfamiliar-looking buildings and a change in the character of our cities, there is no reason why this should be a change for the worse. We need have no fear that London, for instance, will become another New York ; the clay sub-soil alone will prevent that.

DAYLIGHT AND PLANNING CONTROL

A study of what has been done in other countries, together with several schemes which are at present only in the design stage, such as the latest proposals for the development of the South Bank (here illustrated) will give some indication of the possible shape and appearance of this different type of design.

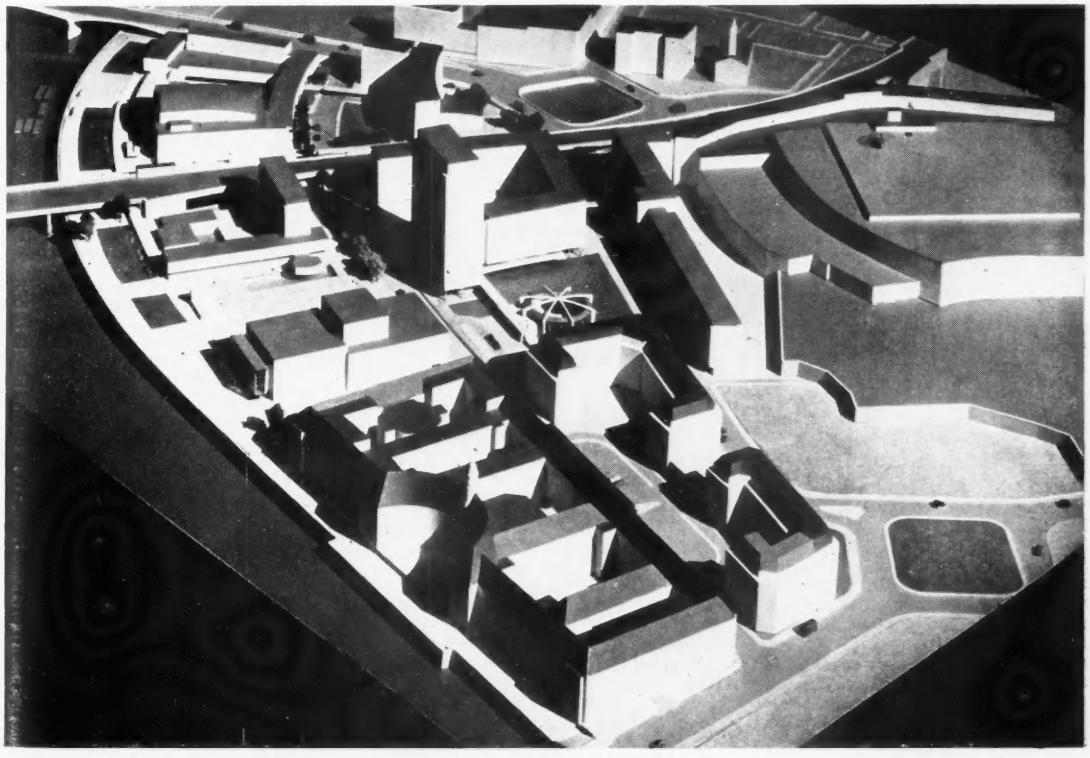
D. R. Humphrys, FRIBA.

R. W. Hurst, ARIBA.

The tall façade on the street frontage is disappearing, and the plan shape has been turned inside out ; there is no longer an imposing front elevation with the whole of the remainder of the building hidden and subordinated but, rather, compositions of narrow blocks some 50 ft. wide representing the depth of two offices and a central corridor, and internal lighting areas have given way to very wide open courts between narrow wings.

The cause of these changes has been a growing appreciation of the value of good working conditions on the health of the occupants of the building, which is reflected to the developer's advantage in the rental value of the office space. The achievement of these conditions, however, poses other problems in design which have so far only partially been solved.

Less ground cover, together with a concentration of the mass of the building in a single thin block, means a consider-



Proposed redevelopment of the South Bank Site. J. L. Martin, FRIBA, Architect to LCC.

able increase in its general height, and this could mean that the evil of bad daylight in individual offices may be overcome, only to be replaced by massive machine-like beehives so inhuman in scale as to make the surrounding streets intolerably oppressive. If, then, it is to be accepted that buildings will be high in the cause of good daylight, how is a pleasant environment to be preserved ?

Although there are few definite examples to refer to, this aspect of the problem has been given a great deal of thought, and within the framework of some planning schemes there have been incorporated methods of control which are designed to assist in achieving this end. The recommendations to the City of London made by Dr. Holden and Sir William Holford, for example, are designed to obtain a reasonable compromise between the size of building and site cover. They are, broadly speaking, based on a ratio of site area to total permissible floor space which can be adjusted to suit particular cases. Allied to this " plot ratio " is a system of control providing for reasonable daylight within the building itself and at the same time ensuring that sufficient light reaches its neighbours.

The principal effect of these recommendations is that the mass of a building becomes concentrated away from the boundaries of the site, and only lower wings present themselves to the street frontages. This is a definite advance, but it is open to question whether it is not placing too heavy a responsibility on the Planning Authority to ask it to determine a suitable plot ratio which will preserve equity between developers' interests and at the same time be one which ensures good general layout and massing.

Control is only a means to an end, and in time architects' clients will demand the amenities which are at present being encouraged by regulation; in the meantime the greatest freedom should be given to designers; it is essential that planning control should be flexible and enforced rigidly only to the extent of ensuring minimum standards.

HEIGHT AND APPEARANCE

In high density areas, experience shows that provided there is a comprehensive development scheme and that due regard has been given to the proximity of existing buildings of architectural importance, some discretion should be allowed to the architect in the choice of the height of his building. If a maximum height restriction is enforced there is a very real danger that it may become extremely difficult, if not impossible, to prepare a design so that the proportions of its individual elements and their relation to one another are harmonious.

Height alone, if the high blocks are in the right place, need not have a detrimental effect on the appearance of an office building area; properly used, a reduction in site coverage can be of great benefit at ground level to both traffic and pedestrian circulation. With an imaginative use of levels, and the provision of walks through and under the buildings, it should be possible to retain the small-scale and intricate pattern of some of our older cities, whilst at a higher level the main building rises up almost unnoticed.

A survey of existing office buildings shows that large areas of the ground-floor letting space need not have direct access from the street, and that in some cases of extreme congestion it may be desirable to eliminate a proportion of the ground floor in addition to reducing the site cover.

These remarks regarding height are made on the assumption that the façade treatment and character of the building will be designed in a light and elegant manner, rather than that it should rely for its dignity on appearing as though it were built of masonry with heavy carving and mouldings. Gothic pinnacles and Classical pediments 20 or more storeys from the pavement have been used, but torn from their context they become meaningless applied decoration.

Well-proportioned blocks and clean lines, together with the use of good-quality materials, can give a feeling of richness, security and permanence which are acknowledged requirements of important firms occupying office blocks. Colour—even strong in tone if carefully used, and provided the material is well tried—can take the place of carved cornices, architraves and string courses. Indeed, if our buildings are to be simple in character and less reliance is to be placed on the moulding of their faces, it becomes almost imperative that coloured materials which can be cleaned should be used if the final result is not to become a large area of glass, framed in blackened stone.

PUBLIC OPINION

If this trend for higher and lighter buildings is to develop, the public must be carried along with the designer, at least to the stage where it has an understanding of what he is trying to do. In England we take great virtue in the love of tradition which has been an effective brake on ill-considered experiment. Owing to the permanence of building, however, this tendency becomes even more strongly marked than in other fields of art, and anything new or unusual is automatically dubbed dangerous and bad. It is therefore important that suitable publicity in lay circles should be given to this trend in design, together with the reasons why it is taking place.

D. R. HUMPHRYS and R. W. HURST

BOOKS

*** *Books reviewed in these columns may be obtained on application to the Book Dept., "The Builder," 4, Catherine-street, Aldwych, WC2. Cash (which should include* 1s. *to cover postage and packing) should accompany the order.*

THE CASTLES OF GREAT BRITAIN. By Sidney Toy, FSA, FRIBA. (London: William Heinemann, Ltd.) Price 25s. net.

MR. TOY, who has already given us a short history of the fortifications of Europe and the Levant, here concentrates on the ancient fortifications of our own island, from the prehistoric earthwork to the Martello tower. He shows how these buildings for defence changed and grew progressively stronger with the invention of more and more powerful weapons of destruction, until in the end they became obsolete. Fortunately some have been preserved more or less intact, and are now popular show places, but the majority are little more than desolate and romantic ruins.

It is, of course, impossible to deal thoroughly with all the forts and castles of Great Britain in a single volume, and the author has, therefore, confined his attention to those having the best preserved features of the different periods of development. Mr. Toy has personally examined all the castles and other works he describes (well over a hundred), and has himself measured and drawn the many plans, sections and elevations and taken nearly all the photographs. Drawings and photographs are alike excellent, the former being particularly valuable because they show, where necessary, the various periods of construction with approximate restoration of parts destroyed. Interesting chapters are included on the weapons and siege operations of the Middle Ages; on towns, fortified bridges and churches; and on forts for artillery.

It is curious to note how, in warfare, history tends to repeat itself. Mr. Toy records that William the Conqueror brought over, in his invading ships, a prefabricated fort which was erected at Pevensey, on the evening of the day of landing. Something of the same sort was to be done in the opposite direction nearly 900 years later. Mr. Toy ends on a note of hope. "Many new weapons," he writes, "from the crossbow to the atom bomb, have been regarded as portending the end of civilization. But the ingenuity of man has never failed him, and never will fail him, in the provision of adequate defence against any weapon which the human mind can devise." We hope he is right.

G. J. H.

BOOKS RECEIVED

THE PARISH CHURCH OF ST. KENTIGERN, CROSTHWAITE. By F. C. Eeles, OBE. (Carlisle: Charles Thurnam and Sons, Ltd.) Price 7s. 6d.

MEN AGAINST THE JUNGLE. By Ritchie Calder, CBE. (London: George Allen and Unwin, Ltd.) Price 15s.

HOME AND ENVIRONMENT. By Walter Segal. (London: Leonard Hill, Ltd.) Price 42s.

Sunny Andalusia

By ARTHUR W. KENYON, CBE

(with sketches by the Author)

SUNNY Andalusia—Cordova, Seville, Cadiz, Algeciras, Malaga, Granada! "Where do we start, where do we stay?" What matter? These towns are not put in any order of importance, but purely for convenience, for anyone motoring in Spain might well take a route embracing these and other places.

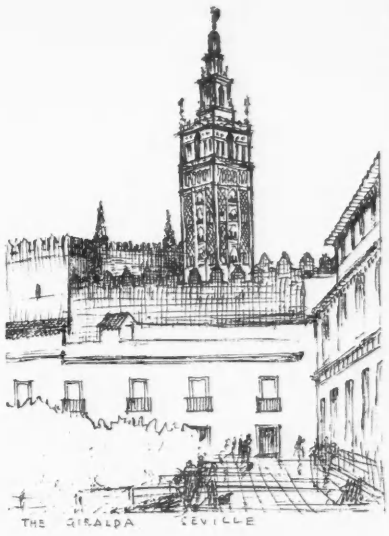
Distances between towns in Spain are great, and the traveller between one place and another sees very occasionally a little hillside town perched upon some prominence like snow upon a peak, for they are always whitewashed. He is drawn to visit them, but, alas! time always forbids and he pushes along and thinks "Some other time."

The sierras through which you pass can be monotonous and tiring with their endless mass of olive trees, but in time the peace of such vastness begins to take hold, a peace which it is hard to find in any other country. You see teams of mules slowly ploughing the countryside, for there are no fields and there is a feeling that the land is not possessed by any individual: it appears still to be as God made it. You wonder where the people working in the fields live, as there are no habitations for miles. Do they camp out all night with the shepherds, or do they trek back to some distant home? You feel they are fixed in their everlasting places.

CORDOVA

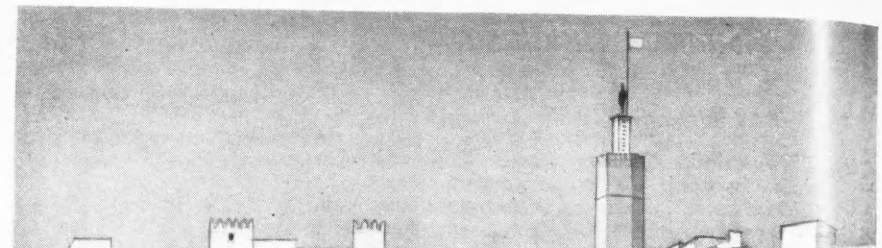
So from town to town, each an individual place, and you begin to realise that before the age of quick travel the journey between towns was only undertaken by a few, and therefore their individuality as separate communities remained. There are small places through which you pass, and, simple though they may be, they are hospitable in their small bars. It is here you seem to get to know the people. Politeness is everywhere and a certain restrained joy at meeting a foreigner.

Let us make our first stop at Cordova: approached by night its long avenues impress, laid out in a park-like manner, brilliantly lit from tall standards. By day the approach seems to be to just another town until you search more deeply into its by-ways.



Cordova — once the capital of Spain with a million inhabitants, difficult to imagine now with a population of only 165,000—still retains its Arab architecture, its white houses and beautiful patios, with its orange trees and palms. The chief feature of this town is its amazing mosque, now consecrated as a cathedral, the second largest in the world, with its 850 columns and Moorish arches interlaced with brickwork vaulted over in varying periods. It is, in fact, a forest of Corinthian-capped columns, all monolithic, in varying coloured marbles, many of them taken from the Roman temple of Janus. It is almost bewildering and one can only wander among them and ponder upon the early religions which have knelt here to their gods. It is difficult to drag oneself away from this fantasy into the brilliant sunlight of the courtyard, dominated by a tower in a more sober period of architecture. The streets of the town are spacious and pleasing, and the squares are busy with people.

At Cordova is buried the famous bull-fighter Manolette, who was killed in the ring at Linares in 1947, and his tomb has now become a place of pilgrimage, which shows the intensity with which Spaniards regard this spectacle.



SO TO SEVILLE !

So we progress to Seville through somewhat level and less interesting country, passing through two small towns, Eciza and Carmona. In the former is hidden away in an inaccessible back street what has been a wonderful old church dominated by a most exquisite Moorish tower with blue and red tiles mixed in with stone and sunbaked bricks, the latter richly carved. The interior, dilapidated in the extreme, is now being renovated, and there is the most magnificent collection of Moorish altar pieces in rich gold. Carmona, a town of 18,000 inhabitants, has very beautiful examples of Moorish art besides Roman antiquities. And so we reach Seville, situated on the banks of the Guadalquivir.

The magnificent Gothic cathedral was started in 1402 and completed one hundred years later. The altar piece, carved in wood, dates back to 1492, and there is a fine collection of pictures in the sacristy. The famous tower of the Giralda forms part of the courtyard ; this was originally the tower of the mosque built in 1184, and as perfect to-day as then, as the climate has been so kind to all these ancient structures. The Alcazar was for many years the palace of the Moorish emirs, but it mostly dates from the fourteenth century. The courtyards with their deep recesses are almost indescribably exquisite. The rich marble columns, the beautiful mosaic-like plaster work and the gorgeously coloured tilework for the base of the walls must be unsurpassed. From the great central Courtyard of the Maidens, with its beautiful columns and arches, lead off smaller halls, the Court of the Ambassadors and the Court of the Dolls being two of the most superb examples of the art and skill of their craftsmen. It is so lovely to wander about in such brilliant surroundings and to pass through into the gardens laid out with such skill, with waterfalls and rich pavings, all brought to life by the orange and lemon trees, palms and jasmins. How lovely are the old quarters of Seville, the narrow streets and beautiful patios, with their fountains and wrought-iron grilles !

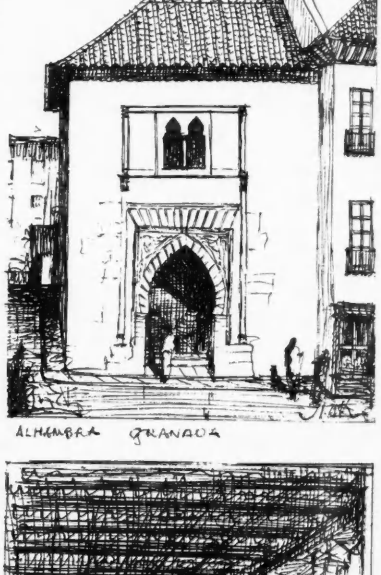
Across the river is the gipsy quarter. Here also are made the famous " azulejos " or the beautiful tiles of most brilliant colour which have been made in this district for generations. Seville is noted for its Spanish dancing and " The Casino " is one of the leading night clubs which is famous and it is a great relaxation after the more strenuous sight-seeing.

MATURING OF SHERRY

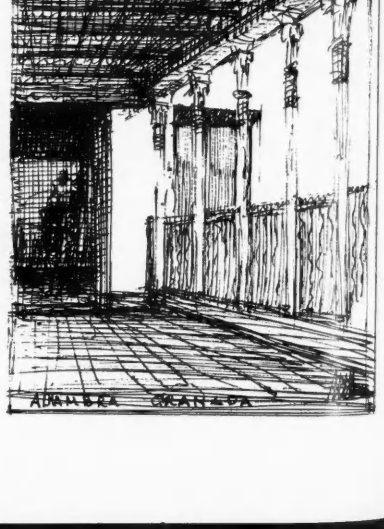
We leave Seville and pass again into well-cultivated country on the long journey to Cadiz and Algeciras, but any tedium can be enlivened by a visit to Jerez, the great vine-growing country, which produces the famous sherry, and just for an hour, or longer, if possible, let us be shown round the " bodegas " of the firm of Gonzalez Byass. What immediately strikes us is the perfect peace of the place ; nothing seems to be happening at all except the maturing of the wine in the great 108-gallon oak casks.

In the wine halls there are about 30,000 casks stored three deep. When the wine has matured for several years in casks in the " nursery," it is placed in the top row of the three tiers of casks. Those in the second row are 11 years old and the bottom 12 years old. When an order is received, the wine is drawn equally from the bottom row of casks and replenished from the second row, and so the process goes on.

Whether it is the kind hospitality of the members of the Gonzalez family, or the overpowering array of barrels, or the beautiful gardens in which these wine halls or cathedrals are set, it is difficult to say, but after such a visit one feels well prepared for lunch, which can be taken at a very charming restaurant in the town. After this, no journey could be tedious. The journey is through Cadiz, where we have hardly time to halt, but those who wish can see the eighteenth-century cathedral and the remains of Phoenician sarcophagi. From here we pass close to Cape Trafalgar and through a forest of cork oaks until we get a view of the



ALHAMBRA GRANADA



ALHAMBRA GRANADA

giant Rock of Gibraltar.

TANGIER

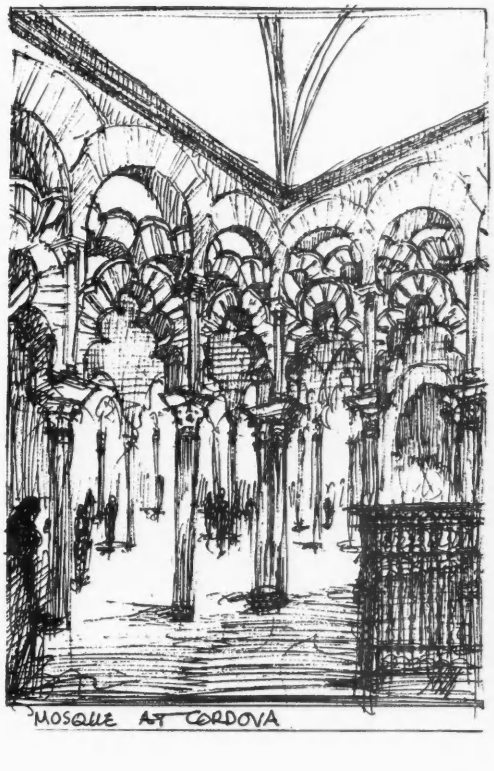
It is tempting from Gibraltar to fly over to Tangier in North Africa and to enjoy, if only for a short time, this almost unspoilt international town, which still remains under the sovereignty of the Sultan of Morocco. It is a hilly town with steep streets and bazaars, and these, with the old Palace of the Sultan, are all rich in character. We must not linger here but return to Gibraltar and on through Algeciras to Malaga.

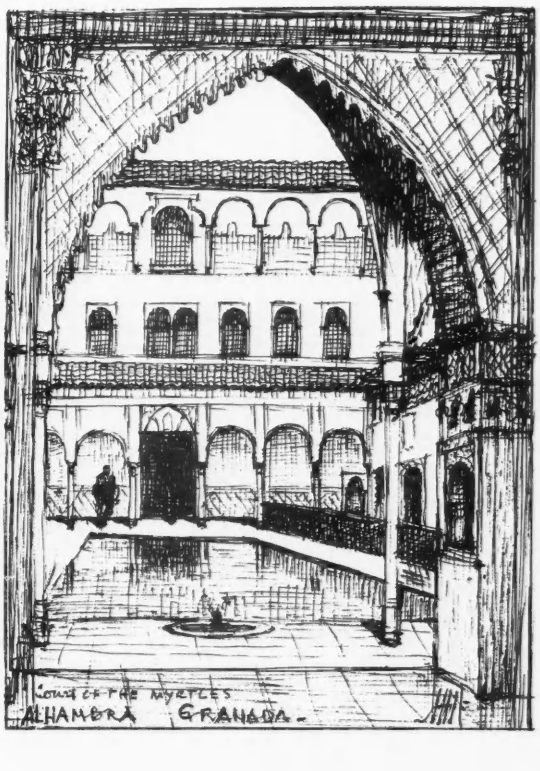
Those with time to spare could make a detour to Ronda and see this amazing town built on the top of a precipitous gorge. The road to Malaga passes along the south coast to Spain with its luxuriant and tropical vegetation, and Malaga itself is brilliant with Mediterranean flowers, with orange trees, figs, bananas and olives and beautiful gardens.

And so to Granada.

How shall we describe Granada? Shall we leave the town and even the cathedral, although one must not miss it, and sit in the sun-drenched environments of the Alhambra? Although much was destroyed in order to build a classical palace (which was never completed and now is a museum) so much still remains of exquisite beauty that the loss is hardly felt as the courts are so complete in themselves.

The Court of the Myrtles is extremely beautiful, with jasper and alabaster columns and a shallow pool reflecting the deep blue of the sky. Lace-like arches, so slender and yet so vigorous, supported from Byzantine caps; applied wall decoration of filigree-like plaster, carved by hand and coloured in pastel shades, give one the feeling of handling a precious jewel. The beautiful dados, in brilliant tiles put together like a mosaic, become almost kaleidoscopic as one stands and views them.





The Court of the Lions, taking its name from the virile fountain supported by twelve carved lions, has magnificent paving with shallow water running through channels. The cluster of columns supporting the intricately carved arches makes this courtyard extremely rich and graceful. The view of this court from the upper galleries, which are equally rich in design, shows the beauty and yet simplicity of the whole conception. The gardens, laid out in a series of terraces, with numerous fountains and running water, are luxuriant in foliage and colour, and one cannot help wanting to possess such a garden with the intricate paving laid out as only the Spaniards seem able to do.

And here we must leave the Alhambra, but must not depart from Granada without visiting the gipsy cave dwellings at the Albaicier where the gipsy dancing girls entertain. These caves have been the home of the gipsies since the sixteenth century. You may enter the cave with its many rooms behind and sit for an hour or so listening to the strains of the guitar and watching the dancing of the girls accompanied by castanets, the clapping of hands, and with the amazing chorus of voices. It is an entertainment in its natural setting which is thrilling and memorable.

Jon Forsyte's lines* inevitably come to mind:

" Voice in the night crying, down in the old sleeping
Spanish city darkened under her white stars!
What says the voice—its clear—lingering anguish?
Just the watchman, telling his dateless tale of safety?
Just a road-man, flinging to the moon his song?
No! 'Tis one deprived, whose lover's heart is weeping
Just his crying: 'How long?'"

These are our memories of Andalusia—that province of Spain so rich and varied in character—and what may linger longest in our thoughts is hard to know. It may be the broad sierras, the massive olive groves, the small towns or the magnificence of the Moorish art. Unforgettable and unforgotten, they make us eagerly await our next descent upon Sunny Spain.

*The Forsyte Saga. John Galsworthy. Published by Heinemann.

View looking north-east. Below : Looking south-east.

GROUP OF SMALL DWELLINGS, CHEQUERS YARD, DORKING

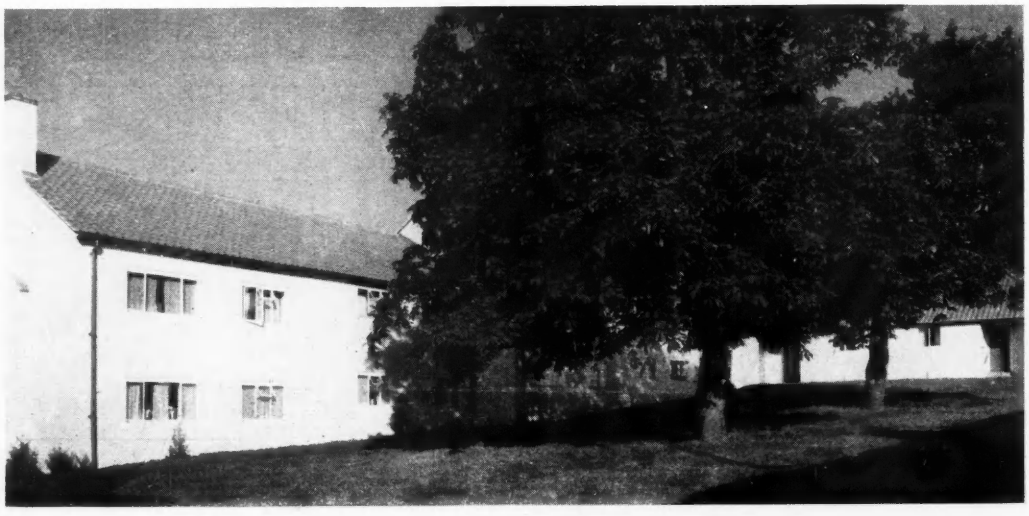
for Dorking Urban District Council

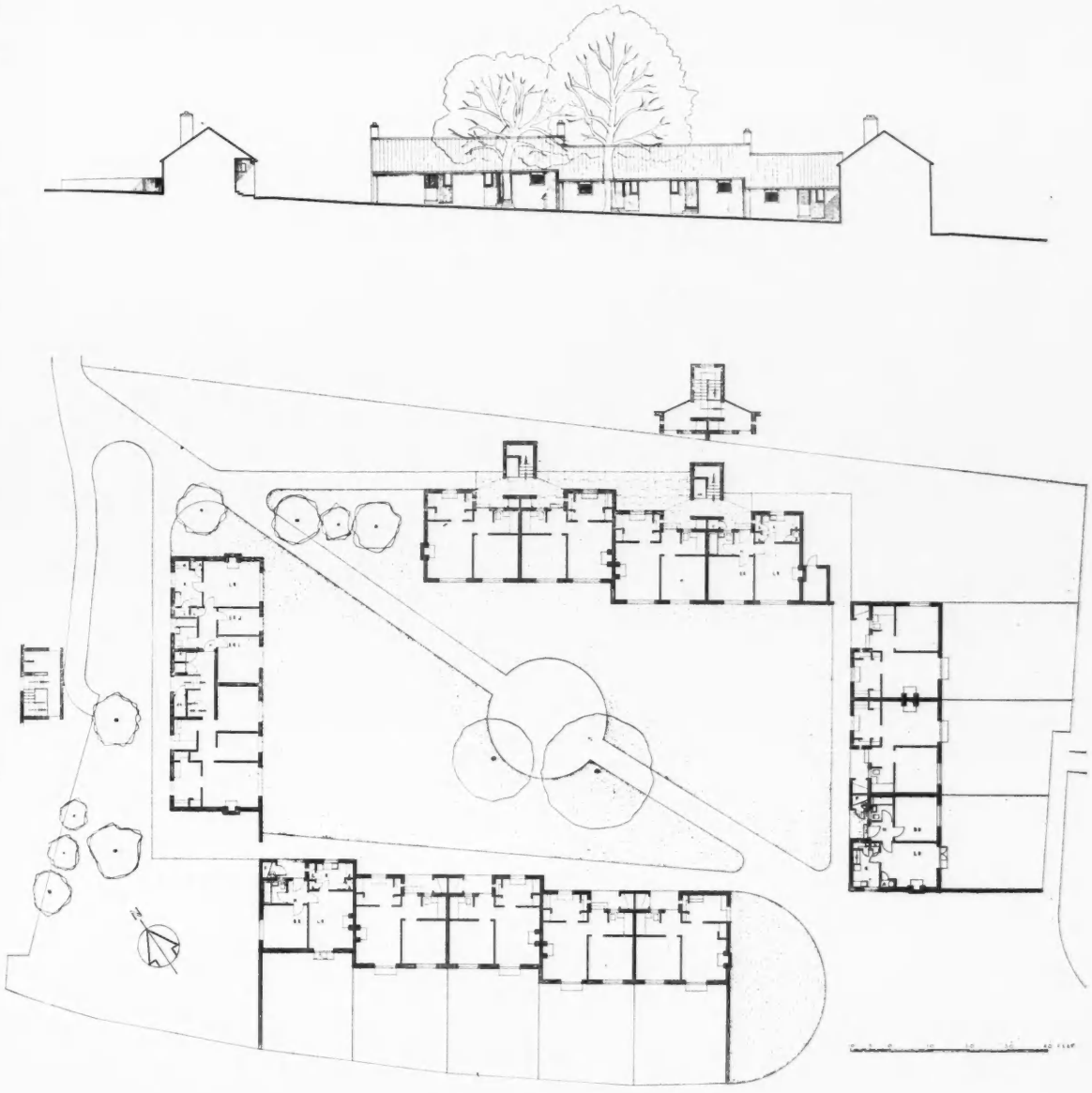
Architects : FARQUHARSON & McMORRAN, FF.RIBA

Responsible for Supervision : H. V. KNIGHT, MIMun.E, Council's Engineer and Surveyor

Quantity Surveyor
A. W. WEST

Builders
S. G. & A. AGOMBAR



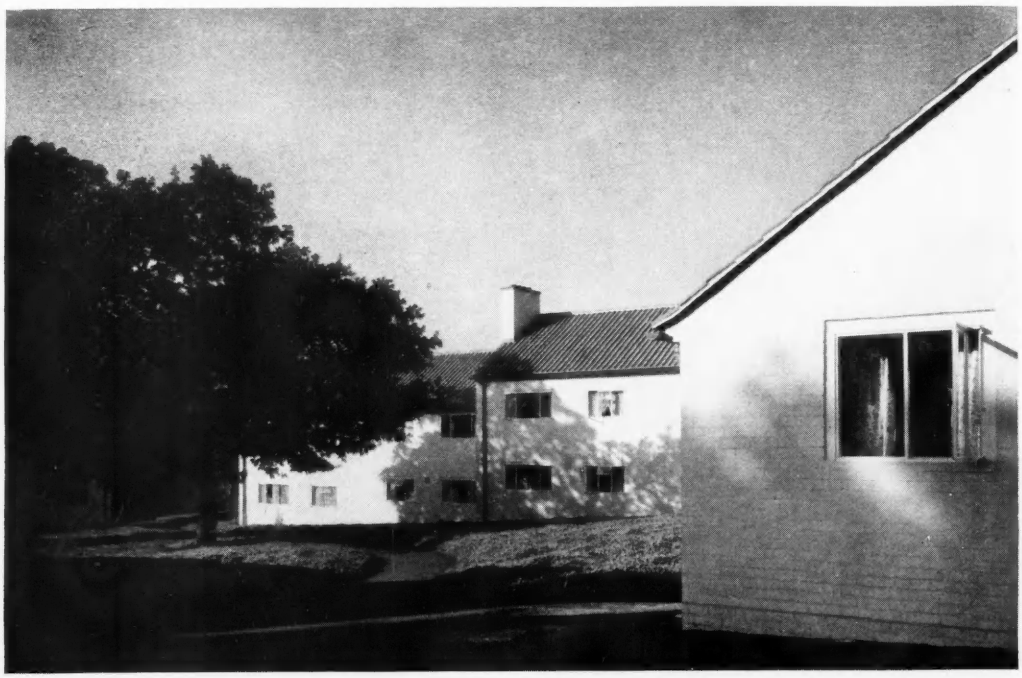


South elevation and plan.

THIS scheme comprises sixteen 2-roomed dwellings and four 3-roomed dwellings in two single-storey blocks, and two buildings of 2-storey flats, and is intended to be occupied by small family units, including old people. The site has a fall of about 15 ft. from south to north; there is a public footpath across it. There are two good trees in the centre of the site, and these have partly dictated the arrangements of the blocks. The single-storey dwellings will have small private garden plots; the remainder of the site will be laid out and maintained.

The external walls will be of common bricks finished with cement paint, with steel casements in purpose-made concrete surrounds. The roofs will be covered with sand-faced pantiles. Each dwelling will have a living-room grate with back boiler to provide hot water, supplemented by a gas sink heater in each dwelling. The upper floors in the 2-storey blocks will be of reinforced concrete, and all floors will be covered with patent asphaltic tiles. Construction is being supervised by Mr. H. V. Knight, MIMunE, Engineer and Surveyor to the Council.

J



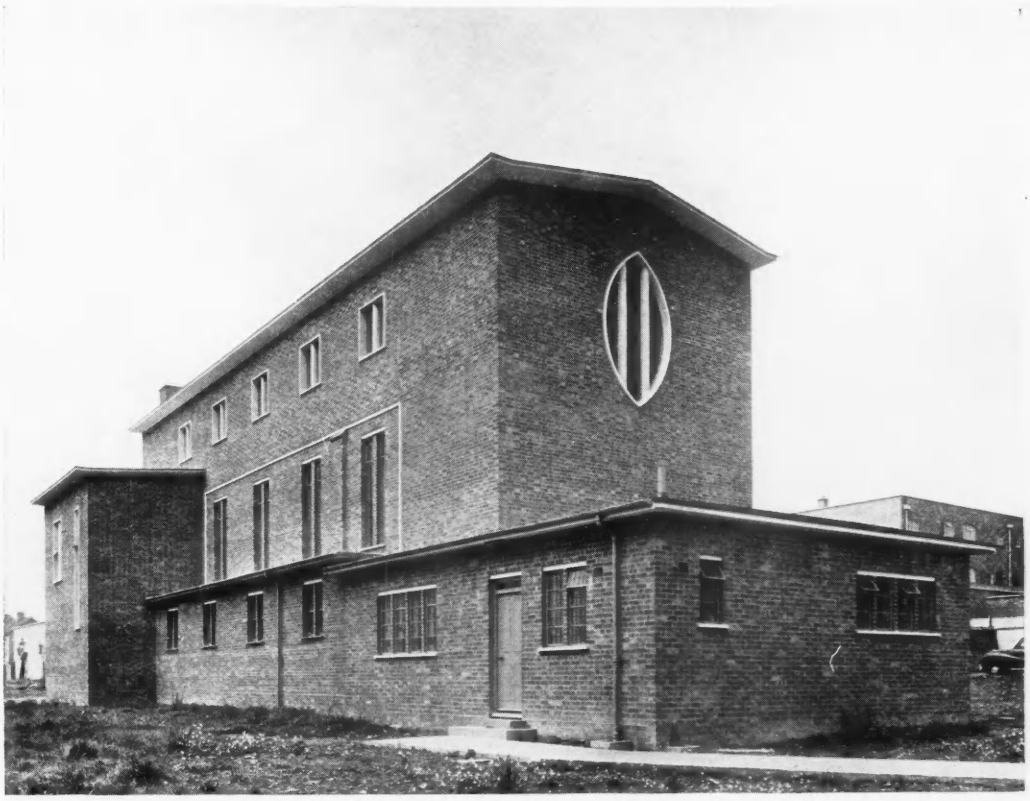
View from southern approach.

Sub-contractors and suppliers were :

Metal windows, Williams and Williams, Ltd., Tunbridge Wells ; sanitary ware, fire surrounds, Longhurst and Pratt, Dorking ; light ironmongery, W. N. Froy and Sons, Ltd. ; kitchen fitments, The Midland Woodworking Co., Ltd., Melton Mowbray ; doors, Bryce White and Co., Ltd., Slough ; floor tiling (Semastic), Pilkington's Asphalt Co.; suspended flooring, staircases and concrete window surrounds, Tercrete (Tersons, Ltd.) ; electrical installations, Keeshaw, Ltd., Betchworth, Surrey ; gas installations, South Eastern Gas Board, Dorking ; and external painting in PVA " Synflat " emulsion paint, Smith and Walton, Ltd., Haltwhistle.

SMALL DWELLINGS, CHEQUERS YARD, FOR DORKING URBAN DISTRICT COUNCIL

The western block.



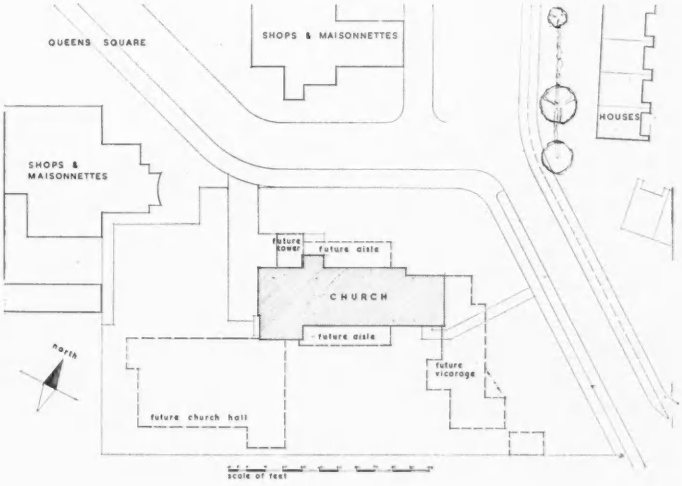
View from south-east.

Church of St. Barnabas, Adeyfield, Hemel Hempstead

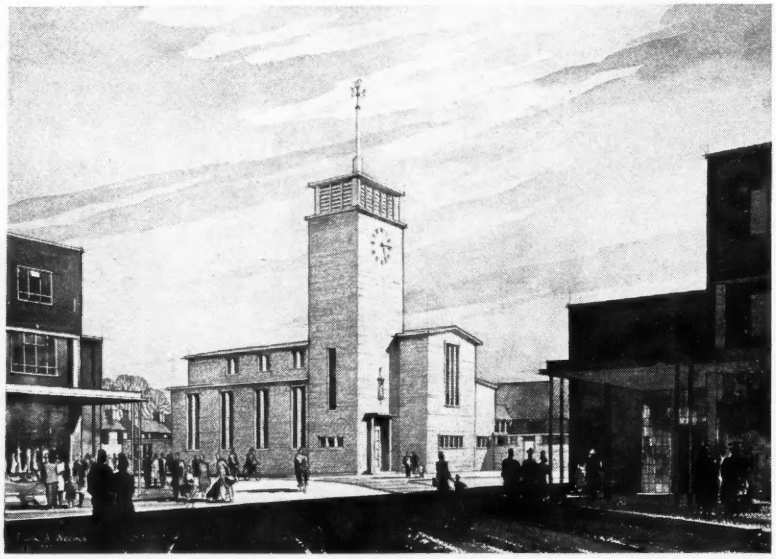
Architect
FELIX J. LANDER, FRIBA

Builders
C. MISKIN & SON, LTD.

THE complete scheme includes church, church hall and parsonage house for this neighbourhood unit of Hemel Hempstead New Town. At present, only the nave of the church has been built with part of the vestry accommodation, and this was recently consecrated in the presence of H. M. The Queen. The tower and aisles of the church are to be



The layout, showing future developments.

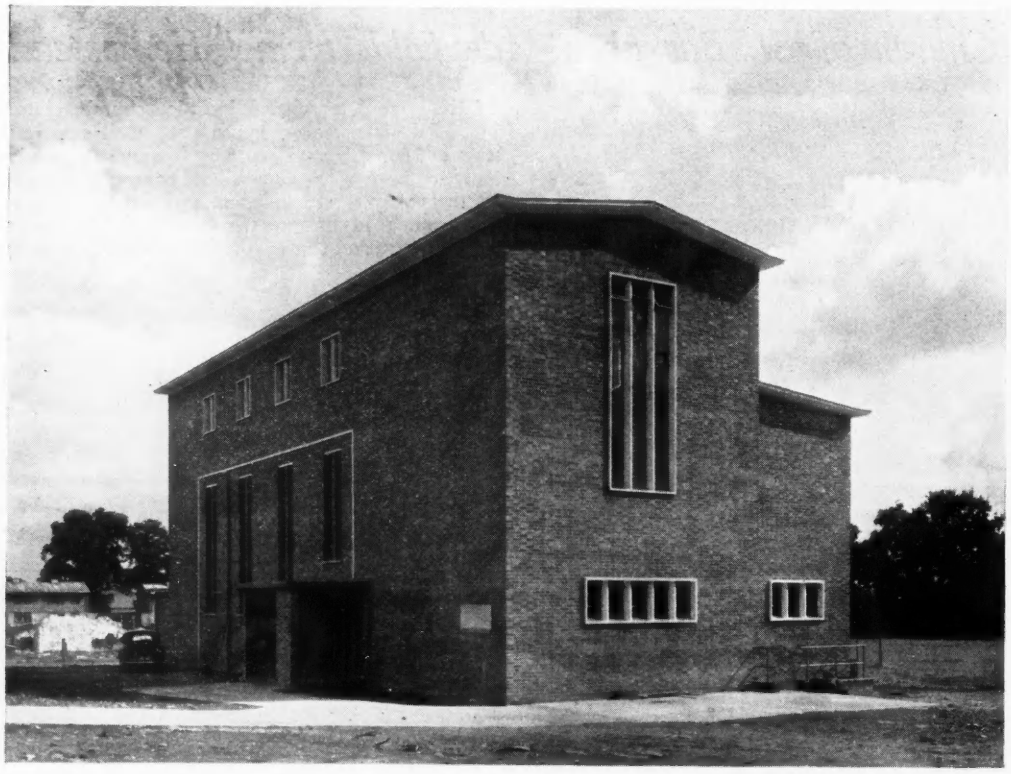


Perspective of church as it will be completed. Below : View from SW. The wall contained by the rectangle of stone on the north elevation is temporary and will be demolished when the aisle is built.

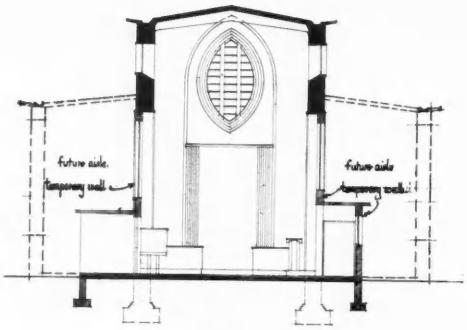
added later. The seating accommodation of the present portion is approximately 180. The seating accommodation in the completed scheme will be approximately 350.

The construction generally is of solid brick walls. The future openings for the aisles are formed with reinforced concrete beams carrying the wall above, supported by reinforced concrete stanchions at each end and at one intermediate point on each side. The opening thus formed has been filled in with 11-in. brickwork which will be demolished when the future aisles are built.

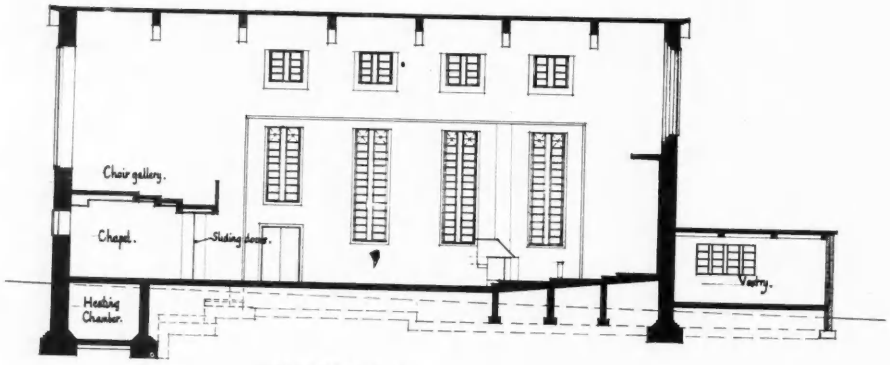
The roof is formed of reinforced concrete beams spanning the width of the church and carrying precast concrete beams laid to a slight pitch. The roof is covered with three-ply bitumastic felt covered with asbestos tiles. The eaves are tilted inwards to a gutter running along the top of the wall ; stoneware pipes are taken down in the thickness of the wall and are turned outwards at the bottom to discharge



Interior looking east. The ceiling is in natural coloured wall board, with brown and green decoration. The cornice is blue and grey. The pews were given from a church which is to be demolished.



SECTION A-A



SECTION BB

The font. The shaft is in 2-in. brick, the base and bowl being in Portland stone. African mahogany and a painted wrought-iron Cross make the font cover.

into gulleys. A gallery at west end accommodates the choir and a future organ. Under the gallery there is a chapel which can be shut off from the rest of the church by sliding doors, so that for small week-day services it is unnecessary to heat the whole of the church. Joinery generally was made in African mahogany by the general contractors, with the exception of the altar which was made of oak by Faithcraft Works, Ltd. The pulpit, lectern and clergy stalls are built of 2-in. Chesham brown bricks. The interior of the brick walls are built fair-face and decorated with broken white emulsion paint.

The ceiling is of wall board in diamond-shaped panels with some of the joints left open to show the battens to which they are fixed, the battens being painted red where they are visible. In the main, the wall board ceiling is left in its natural colour, but the panels at the edge are stained brown, and there are rather light green lines painted on the ceiling. Woodwork generally has been painted grey. The pews are from a Victorian church which is now being demolished. The windows are leaded lights with the opening lights in steel. The colour of the brickwork externally is light brownish red.

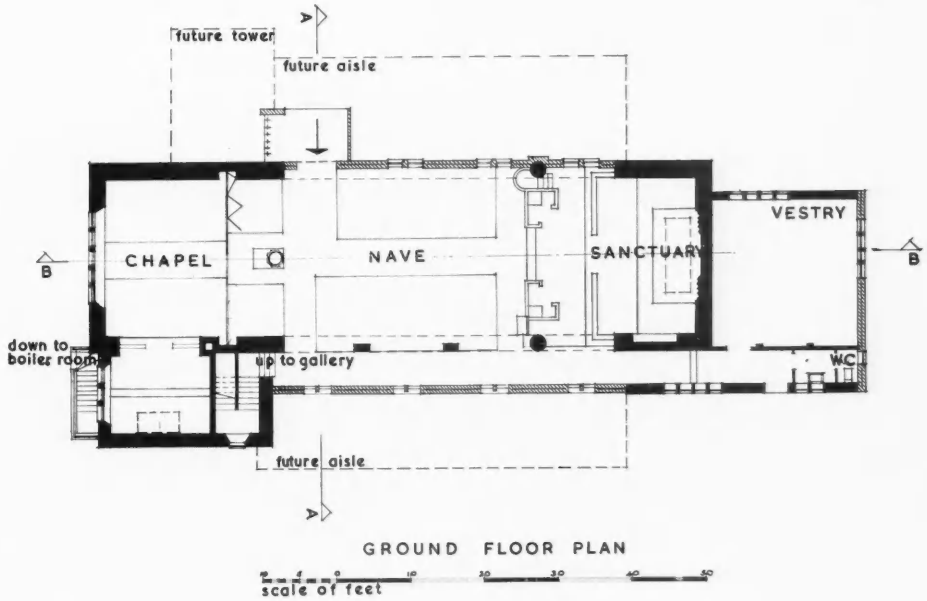
Generally speaking, everything possible has been done to cut down maintenance externally. There are no rainwater gutters or down pipes to be painted, and the use of steel has been confined to the opening lights of the windows so that there is practically no external painting to be done. Heating is to be low-pressure hot-water system with auxiliary points for electric radiators. Flooring in the gangways is of 12-in. buff-coloured concrete tiles and under the seating thermoplastic tiles.

Sub-contractors and suppliers were:

Reinforced concrete work, Trussed Concrete Steel Co.; reconstructed Portland stone, Malcolm Macleod, Ltd.; hot-water heating installation, S. A. Hopkins, Ltd.; St. Albans; folding sliding doors, Esavian, Ltd., Stevenage; thermoplastic tile flooring, Semtex, Ltd.; concrete floor tiles, Excelsior Patent Stone Co., Finedon, Northants; electrical installation, Giffins and Co., St. Albans; electric light fittings, Hume Atkins and Co., Ltd., Letchworth; ironmongery, Yannedis and Co.; wall safe door, Chubb and Sons, Ltd.; paint and emulsion paint, Blundell Spence and Co.; bituminous roofing, E. Parkinson, Ltd.; Portland stone for font, J. Bysouth, Ltd.; altar table, Faithcraft Works, Ltd.; metal windows and leaded lights and sanitary fittings, B. Finch and Co., Barkingside; and bricks, Erith and Co., Ltd., Radlett.

Interior looking west. The chapel below the gallery can be thrown open when more accommodation is needed.

CHURCH OF ST. BARNABAS, ADEYFIELD



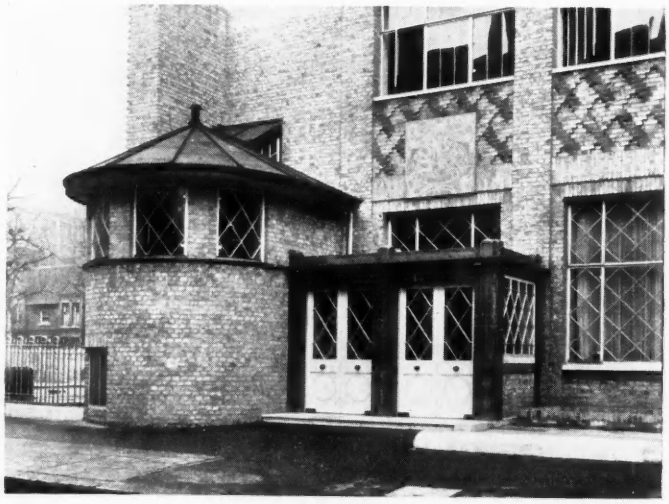
BEFORE the extension now illustrated was built the buildings of the Westminster Technical College, in Vincent-square, consisted of a southern block finished in 1933 ; a later addition on the north ; and, north of that again, the steel frame of a further intended addition that the last war had arrested. From various changes in circumstances and counsels, the plans of this deferred building had become inappropriate, but its steelwork was standing in good condition, and could not be economically removed except where compact replanning made it superfluous. This replanning has therefore necessarily been accommodated to existing stanchions and girders, many of which had been placed with quite different ends in view than those they now serve. As one result of it an increase of 1,192 sq. ft. in classroom area has been obtained on the upper storeys concurrently with a reduction of 1,036 sq. ft. in the total area of those storeys. The removal of unnecessary steelwork has made possible the provision of a desirable service road behind the college and has avoided much proposed obstruction of light to the kitchens and to adjoining property.

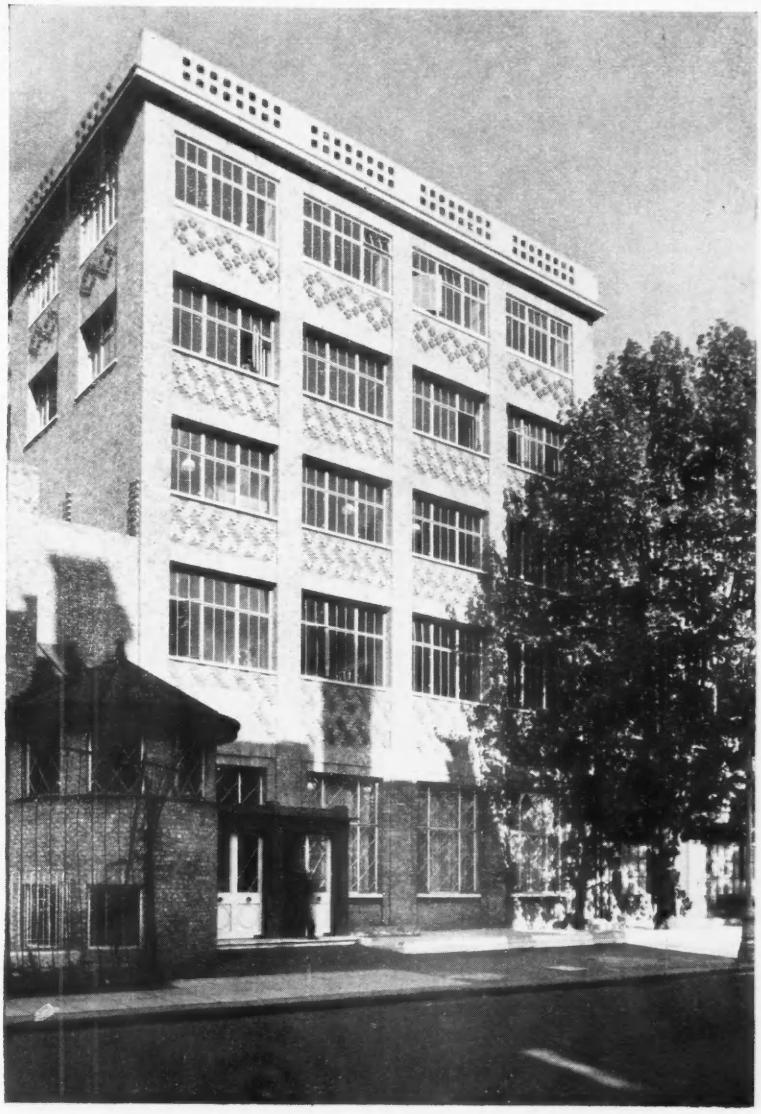
The present extension is not complete ; it lacks, for the time being, the assembly hall, which has been a governing factor in the design. This hall will occupy the site, now cleared, of St. Stephen's schools, running northwards up to the return frontage in Rochester-row. What has been built already consists, on the ground floor, of a large extension of the old restaurant, a private dining-room and ante-room, and an entrance hall adequate in size and dignity as an approach both to the assembly hall and the restaurant, but at present serving only the latter. This restaurant offers to the public the outcome of the training in cookery which is a major activity of the college training first systematised by the late M. Escoffier, in whose memory the private dining-room has been named "the Escoffier Room." This room and the restaurant are separated by a folding partition, which enables the two to be used as one when this is required.

Of the two staircases adjoining the entrance hall, that in front will give access to the gallery of the assembly hall, and that in the rear communicates with the upper storeys of the school by means of a mezzanine passage running southward. Both also go down to the basement where there are cloakrooms and lavatories. The remaining accommodation and its arrangement are shown on the plans clearly enough to need no further description.

As would be expected from its date, the original building of the college is a symmetrical unit of neo-classical style. Its facade is of picked London stock bricks, dressed with Portland stone. The first extension of it, though still perseveringly Georgian in

Detail of brickwork. Below : The entrance from Vincent Square.





Elevation to Vincent-square. Below : Perspective of full scheme.

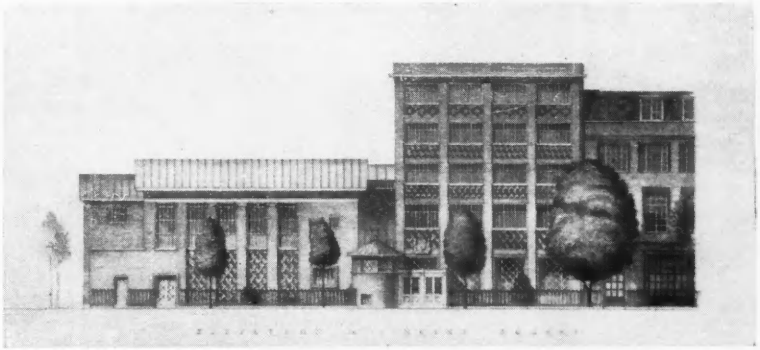
Westminster Technical College, Vincent Square, SW

Architects : H. S. GOODHART-RENDEL & PARTNERS, FF.RIBA

Consulting Engineer
T. BEDFORD, MICE

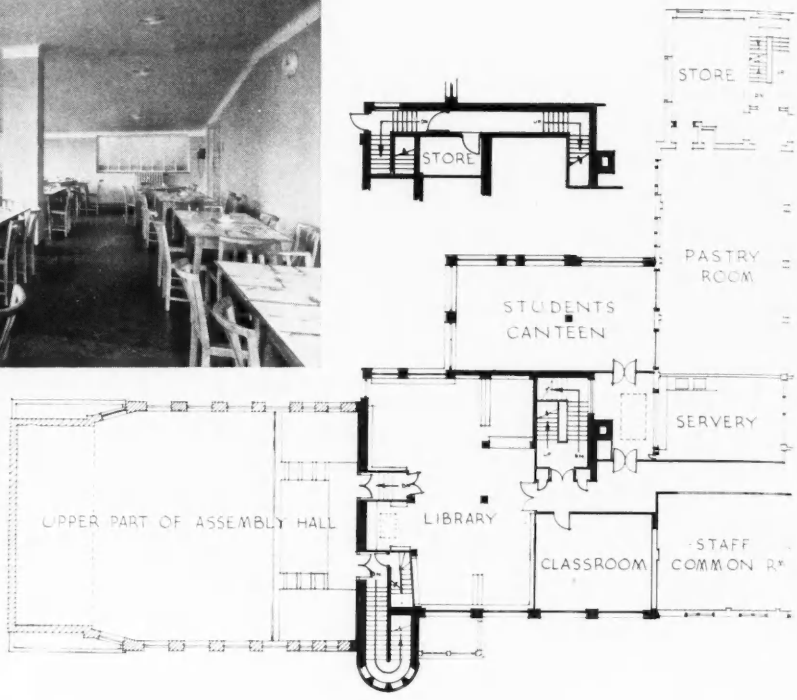
Quantity Surveyors
SELBY & SANDERS

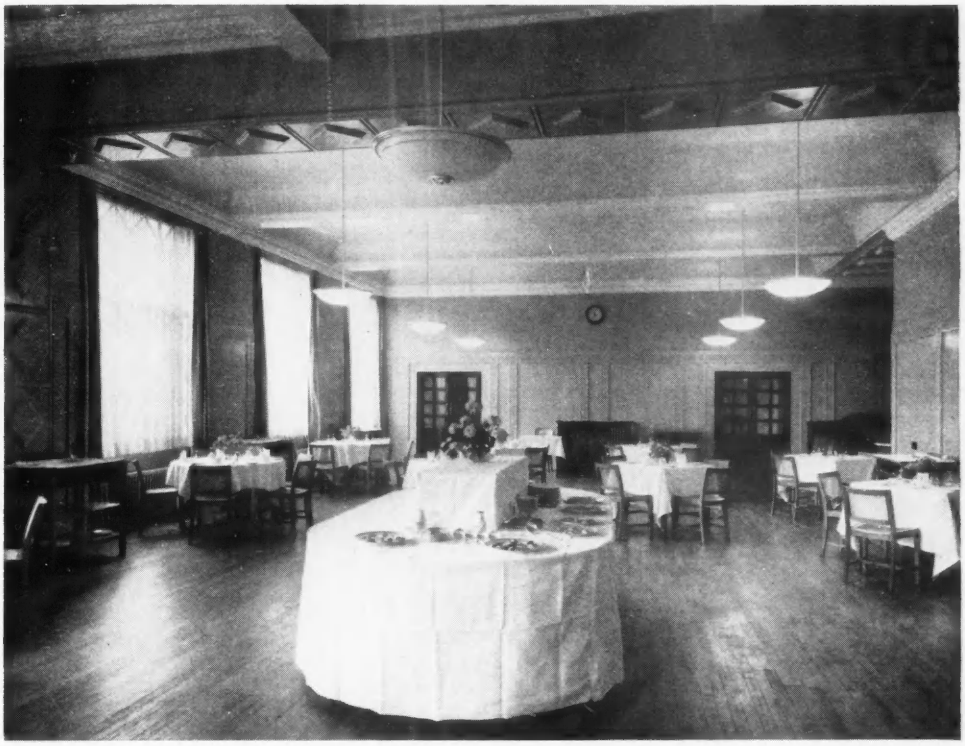
Builders
W. J. MARSTON & SON, LTD.



Students' canteen.

Right : First-floor plan.
Below : Ground-floor plan.



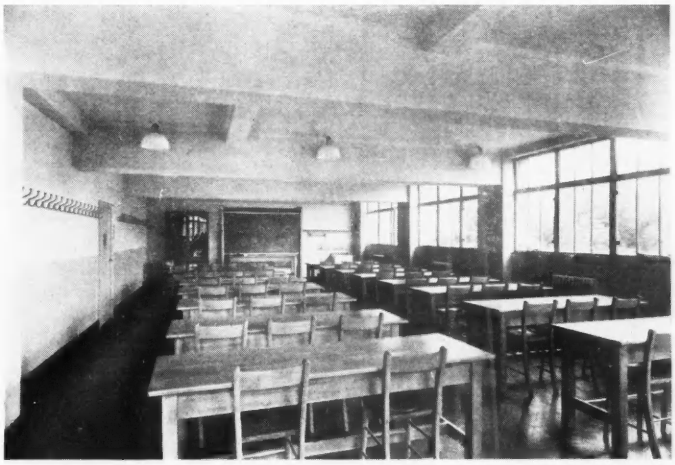


Extension to restaurant.

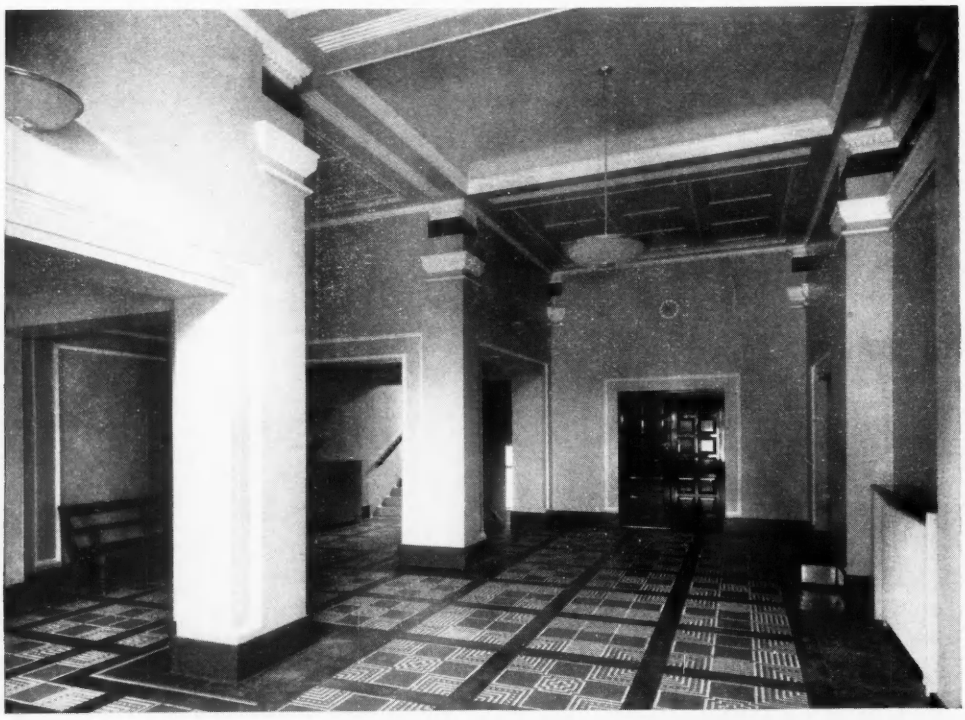
character, is entirely separate in ordonnance, Portland stone being replaced in the dressings by red bricks. In the present extension a further departure was inevitable from all that had been done hitherto. More and lower storeys were impassed, not only by considerations of convenience but by the form of the steel frame already in position. These storeys were to consist of lecture-rooms and classrooms needing the maximum window area of which that frame would allow.

Obviously, therefore, the composition of the new building with the old could in the main be only a picturesque one, the common ownership of the diverse elements being suggestible only by a faint echo of the original neo-classicism in the assembly hall, where such a flavour would not be unsuitable. Continuity of colour has been obtained by the use of London stock bricks, patterned with red. The important entrance to the assembly hall and restaurant which might well have been lost visually in so miscellaneous a frontage has been emphasised by the use of a conspicuous material, Westmorland green slate-stone, which appears there only. The decorative slab above this entrance is a slate graffito inlaid with coloured mastics. It was designed by Mr. J. Ledger.

Internally the entrance-hall, Escoffier room and restaurant extension have panelled ceilings of fibrous plaster, the walls of the Escoffier room and the restaurant extension being panelled also. The



Demonstration room.

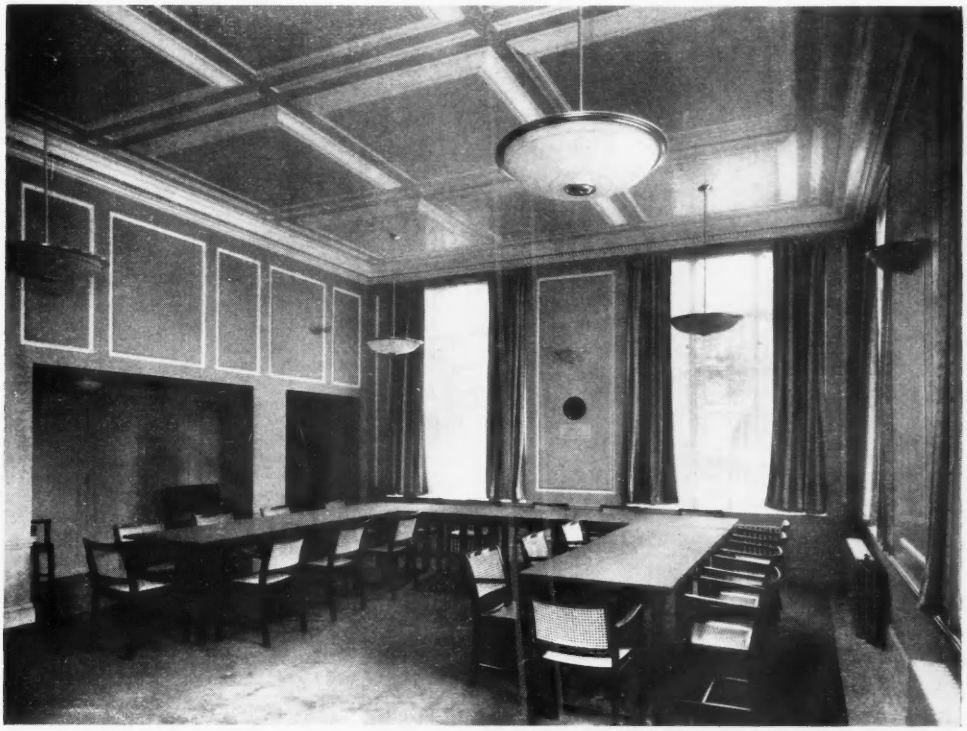


The entrance hall.

entrance-hall has a floor of black, red and white tiles of various sizes. It has been most carefully carried out, from the architects' drawings, by Messrs. Carter of Poole. In this hall the walls are coloured buff, relieved with red and white, the ceiling being white and pale blue. The walls of the Escoffier room and restaurant extension are *ecru*, the ceilings white and pale blue. The doors on this storey generally are ebonised black. The remaining finishes throughout the building are what is usual in buildings of the class to which it belongs.

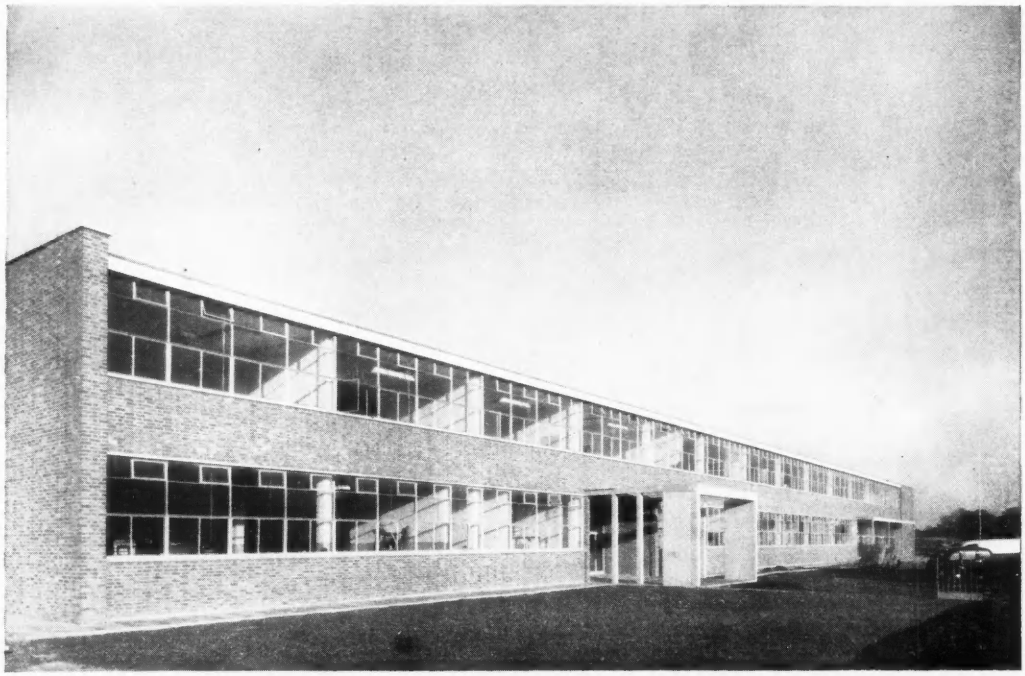
The following sub-contractors and suppliers were employed for the work: Steelwork, Redpath Brown and Co., Ltd.; floors, Caxton Floors, Ltd.; metal windows, Luxfer, Ltd.; heating, Beaven and Sons, Ltd.; electrical work, Electrical Installations, Ltd.; terrazzo, Camden Tile and Mosaic Co., Ltd.; wall tiling, Parkinsons (Wall Tiling), Ltd.; sewage disposal pumps, Burn Brothers (London), Ltd.; library fittings, Walker-Symondson, Ltd.; laboratory fittings, Sotos, Ltd.; steel shutters, Shutter Contractors, I td.; "Durablock" floors, Terradura Flooring Co., Ltd.; wood block, wood strip floors, Stevens and Adams, Ltd.; balustrades, S. W. Farmer and Sons; flat roofing, D. Anderson and Sons, Ltd.; sink units, Falkirk Iron Co.; hot closet, Benham and Sons, Ltd.; sliding door gear, F. Knight and Co., Ltd.; calorifier, W. M. Still and Sons, Ltd.; fibrous plaster–entrance hall, Thomas and Wilson, Ltd.; and fibrous plaster in private dining-room, G. Jackson and Sons, Ltd.

The laboratory.



The private dining-room. The plaque is of Escoffier, and the room is known as "The Escoffier Room"
Below : The library.

WESTMINSTER TECHNICAL COLLEGE, VINCENT SQUARE, SW



General view of administration block.

Factory at Crawley New Town

FOR CRAWLEY DEVELOPMENT CORPORATION

Operating Architect
HAROLD W. MOORE, FRIBA

Consulting Architect
THE CHIEF ARCHITECT, CRAWLEY DEVELOPMENT CORPORATION

Assistant in Charge
PETER C. KEYS, B.Arch (Syd.), Dip.TP (Lond), ARIBA, ARAIA

Quantity Surveyors
E. SPRIGGS & PARTNERS, FRICS

Builders
JAMES LONGLEY & CO. LTD.

THIS factory in the industrial area of Crawley New Town has been built by the Corporation as a purpose-made factory to meet the requirements of the initial tenants, Messrs. W. Edwards and Co. (London), Ltd. (vacuum pump specialists) whilst at the same time being suitable for possible re-letting to one or more future tenants if so required. Apart from the normal requirements of a good factory, provision was required for future extensions to the north and west, including a boiler house large enough to serve them, a high crane bay, large covered loading bays, and a canteen suitable for use on social occasions.

Site.—The site is approximately five acres in area, and is bounded on the south by Manor Royal (the principal road of the industrial area) and on the east by Faraday-road. Access from two fronts enables the entry of goods traffic to be kept separate from the main approach to the factory. An unobstructed view over Magpie Wood, a permanent feature of the industrial area, is available on the south.

Plan.—The total area of all buildings is 92,400 sq. ft., of which 25,400 sq. ft. is devoted to administrative purposes and 67,000 sq. ft. to factory space (including laboratories, boiler house, crane bay, spray shops, etc.). The works entrance and goods entry and exit have been planned on the east side of the site, where car parking and bicycle racks have also been situated. The main entrance, with its car park, is from Manor Royal. The canteen, which opens out on to a terrace and pool, is placed on the south overlooking the wood. Staircases and lavatory blocks, provided separately for works and office staff, are duplicated with a view to any possible future sub-division of the factory.

Construction.—All buildings are framed reinforced concrete structures; the factory area is based on a

40 ft. by 40 ft. grid and the administration block on a 20 ft. by 20 ft. grid. All columns are taken down to concrete bases and external walls are carried on ground beams spanning between them. Flat roofs are screeded with 2 in. vermiculite and covered with built-up bituminous felt.

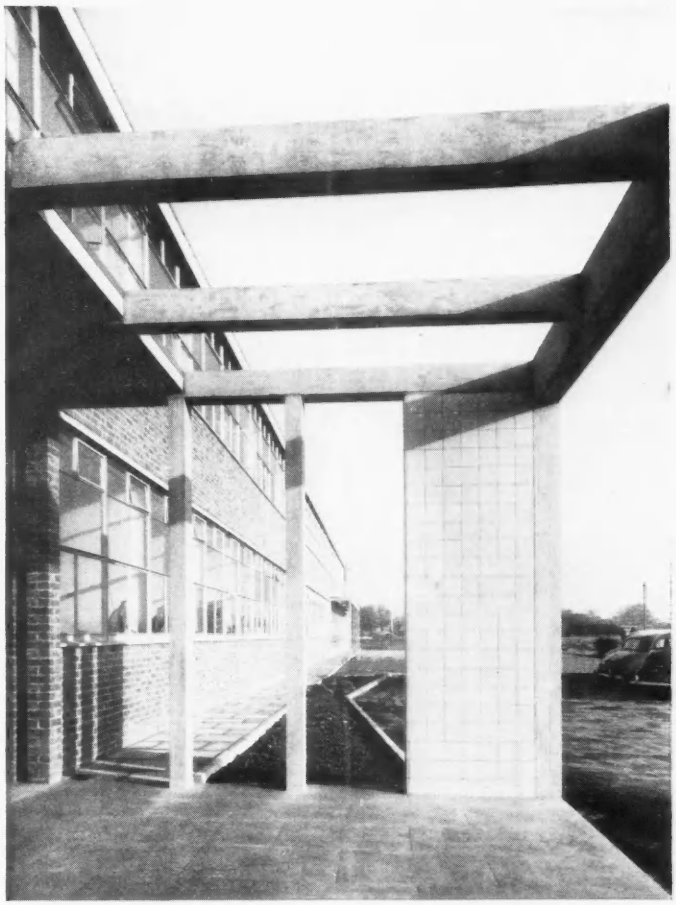
The whole of the factory area is constructed of precast concrete, the majority of which was cast on the site. The columns are, in effect, double cantilevers in the shape of a " T." The north light bays are stopped short of the east and west walls, where flat roofs form " channels " for rainwater which discharges into two 9 in. dia. pipes. The trusses are pitched at 24 deg. and have continuous north light glazing with aluminium members and flashings, and are sheeted with asbestos-cement with aluminium foil underlay.

Except for the roof beams, purlins and gutters (which are precast) the whole of the administration block framing is constructed of *in situ* concrete. The roof is pitched at 4 deg. and is covered with aluminium decking and built-up bituminous felt. There are precast concrete gutters along each side discharging to the flat roof over the kitchen and in turn to the 9 in. dia. pipe which also serves for part of the factory. (The whole of the rainwater is taken in two 9 in. dia. pipes.) All first floors are screeded with $1\frac{3}{4}$ in. vermiculite and covered with cork tiles or quarry tiles.

The walls generally are of cavity construction (with $4\frac{1}{2}$ in. brick external skin and 3 in. or 4 in. concrete block inner skin) passing in front of columns to allow pipes, etc., to be fixed in straight runs along walls, and also allowing windows to run continuously clear of columns.

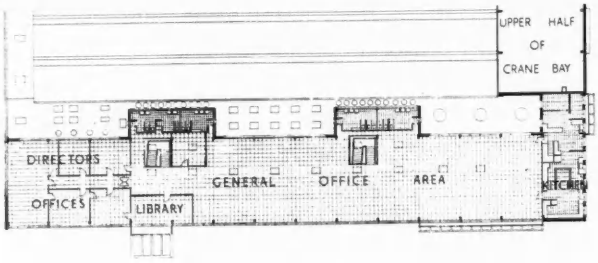
The roof of the time office is formed of lattice beams supported on four steel columns with cantilevers all round. It is sheeted with woodwool slabs and covered with built-up roofing. Up to cill level the wall construction is of cavity type and from cill to ceiling is of glass.

Finishes.—Floors in the factory, laboratory,

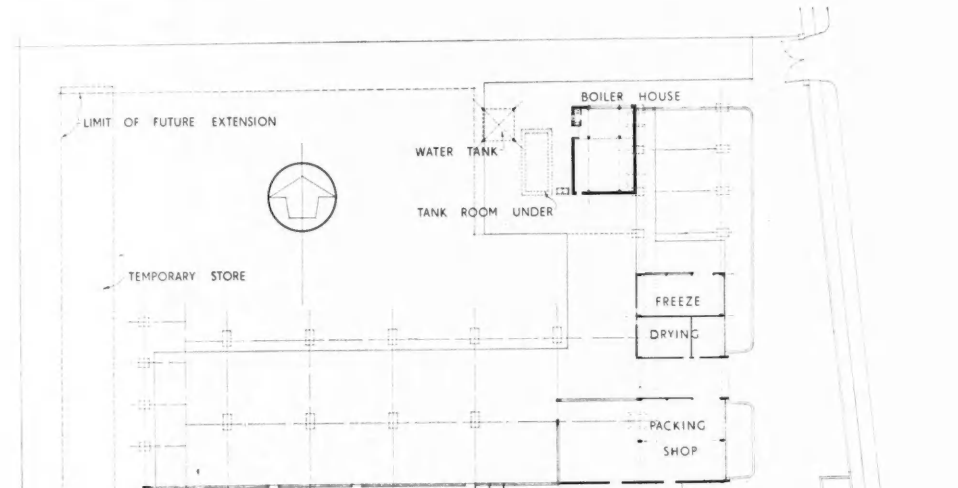


Above : Detail of entrance to administration block.

Left : The entrance hall.



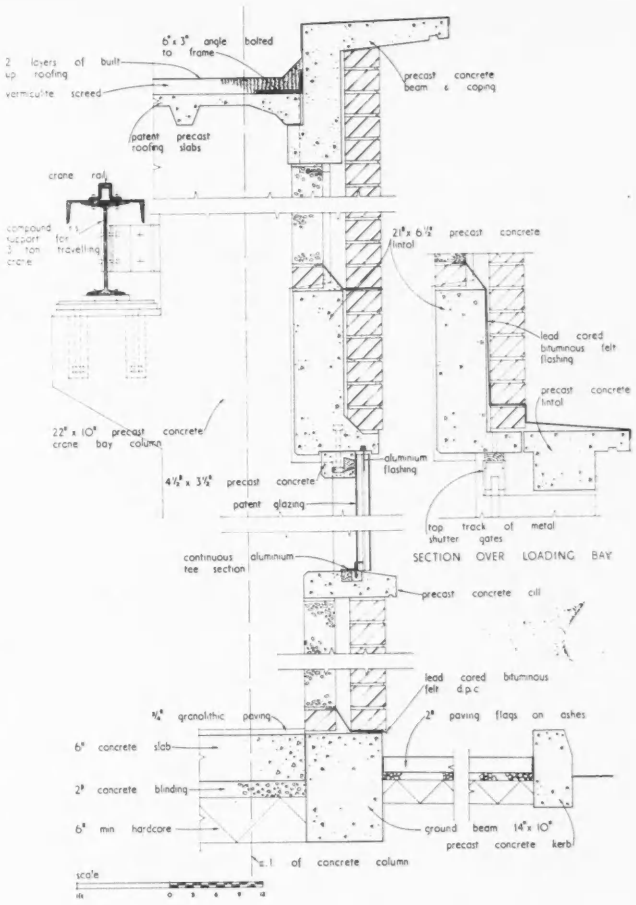
First-floor plan of administration block.
Below : ground-floor plan.

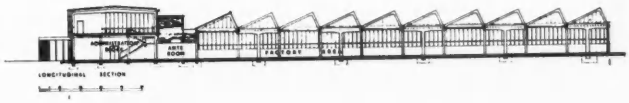


boiler house and time office are of granolithic, ¾ in. thick, laid whilst the floor slab was green. All exposed concrete and concrete blocks are painted; the lining to the roof, which consists of insulation board and fire-proof board, is distempered. Combined external and internal window cills are precast concrete.

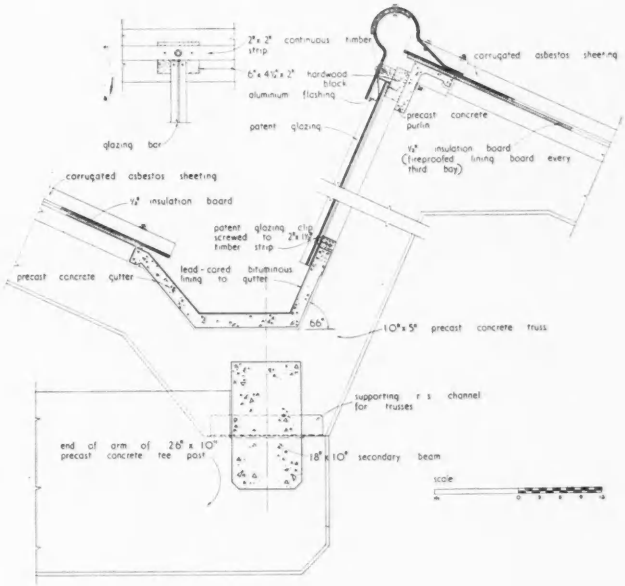
In the administration block floors generally are of cork tiles; the entrance hall and both stairs are terrazzo ; the canteen and ante-room have beech blocks laid in herring-bone pattern, and the lavatories, kitchen and servery are covered with red quarry tiles. All walls and exposed concrete surfaces are plastered and distempered. All windows and external doors are of steel with terra-cotta exterior cills and red quarry internal cills. Suspended ceilings are of self-finished insulation board in panels with concealed fixing. The works entrance, ante-room and entrance hall have fair-faced brick walls. The external paving consists of coloured precast concrete flags, except at the main entrance where natural York stone is used. Pergolas over the main entrance, works entrance and canteen terrace are of precast concrete, with buff concrete frost-proof tiles on the wing walls of the main entrance. Venetian blinds are provided for all office windows facing south and west. The walls of lavatory blocks, kitchen and servery are cement-glaze generally, above a 4 ft. high dado of white glazed tiles.

Colour Scheme.—The external effect relies mainly on the natural colours of a warm multi-coloured hand-made Sussex facing brick, with cream pointing, and the natural finish of the fair-faced concrete work. Internally, the factory walls are pale beige above an autumn-brown dado, the concrete roof members and ceiling lining being in broken white. All exposed pipes and conduits have 2 in. bands of appropriate colours in accordance with British Standards. Beige pink walls and white or broken white soffits are also used in the administration block, the colour of the doors and windows internally being dove-grey.


6" x 3" angle bolted to frame
2 layers of built-up roofing
vermiculite screed
patent precast roofing slabs
precast concrete beam & coping
crane rail
compound support for 3 ton travelling crane
21" x 6½" precast concrete lintol
lead cored bituminous felt flashing
precast concrete lintol
22" x 10" precast concrete crane bay column
aluminium flashing
4½" x 3½" precast concrete
patent glazing
top track of metal shutter gates
SECTION OVER LOADING BAY
continuous aluminium tee section
precast concrete cill
lead cored bituminous felt d.p.c
¾" granolithic paving
2" paving flags on ashes
6" concrete slab
2" concrete blinding
6" min hardcore
ground beam 14" x 10" precast concrete kerb
c.l. of concrete column
scale

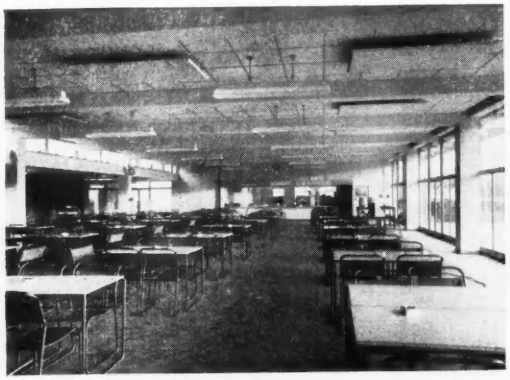


Above : Details of wall construction.
Left : Section through building.
Below : Roofing detail.

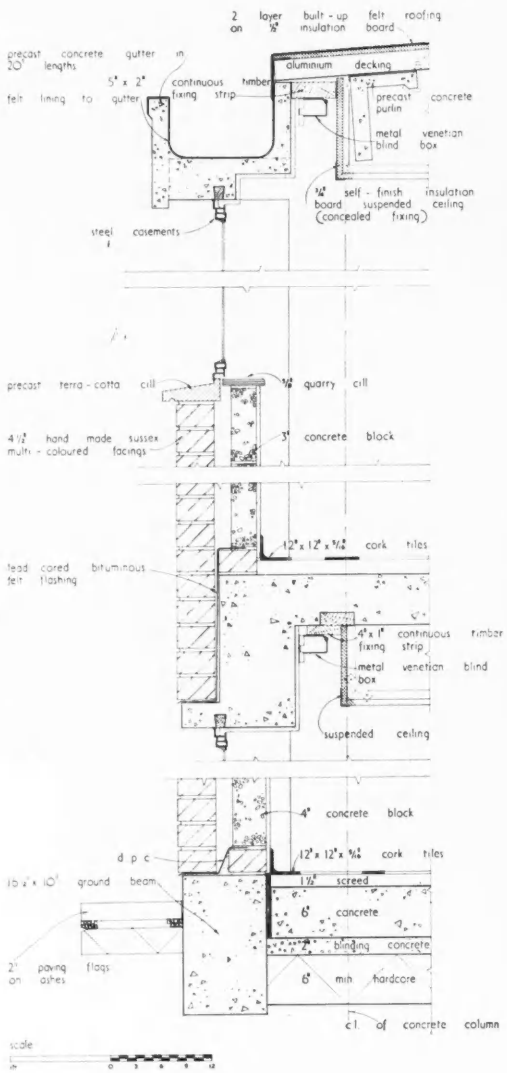

2" x 2" continuous timber strip
6" x 4½" x 2" hardwood block
aluminium flashing
glazing bar
patent glazing
corrugated asbestos sheeting
precast concrete purlin
½" insulation board (fireproofed lining board every third bay)
corrugated asbestos sheeting
½" insulation board
patent glazing clip screwed to 2" x 1" timber strip
precast concrete gutter
lead-cored bituminous lining to gutter
66'
10" x 5" precast concrete truss
supporting r.s. channel for trusses
end of arm of 26" x 10" precast concrete tee post
18" x 10" secondary beam
scale

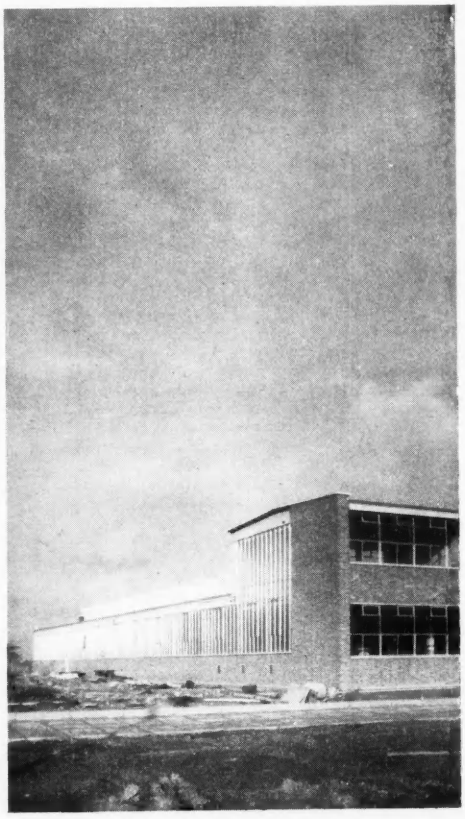
Services.—The heating system generally consists of radiant heating panels suspended from ceilings; in the factory area, the installation is high-pressure hot water and in the administrative block low-pressure hot water. The system is supplied by a pair of vertical tubular boilers fired by fully automatic oil-burning equipment. Domestic hot water is also supplied from the boiler by means of a number of calorifiers. The ventilation of the factory is mainly natural, assisted by a number of extract and inlet ventilators in the north light glazing and external walls. The electrical installation in the factory consists of busbars for power and trunking for lighting.

Compressed air, cooling water and gas have also been provided in the factory area as tenant's special requirements. The compressors and cooling water pumps are located in the boiler house with a grid system of supply mains for maximum freedom in positioning plant on the factory floor, no part of the factory floor being more than 20 ft. from the supply grid.



The canteen. Below : Gutter and floor details.


2 layer built - up felt roofing on ½" insulation board
precast concrete gutter in 20' lengths
aluminium decking
felt lining to gutter
5" x 2" continuous timber fixing strip
precast concrete purlin
metal venetian blind box
½" self - finish insulation board suspended ceiling (concealed fixing)
steel casements
precast terra - cotta cill
½" quarry cill
4½" hand made sussex multi - coloured facings
3" concrete block
12" x 12" x ⅜" cork tiles
lead cored bituminous felt flashing
4" x 1" continuous timber fixing strip
metal venetian blind box
suspended ceiling
4" concrete block
12" x 12" x ⅜" cork tiles
d p c
15" x 10" ground beam
1½" screed
6" concrete
blinding concrete
2" paving flags on ashes
6" min hardcore
c.l. of concrete column
scale



View from south-west, showing return to factory area.

FACTORY AT CRAWLEY FOR THE CRAWLEY DEVELOPMENT CORPORATION

Sub-contractors were : Reinforced concrete structure, R. E. Eagan, Ltd. ; heating, gas, compressed air and cooling water, G. Simpson (London), Ltd. ; electrical installation, Electrical Installations, Ltd. ; tanking, General Asphalt Co., Ltd. ; granolithic floor, Stuart's Granolithic Co., Ltd. ; wood block floor, Wachal Flooring Co. ; cork tiles, Mundet Cork Products, Ltd. ; terrazzo paving and frost-proof tiles, St. James Tile Co., Ltd. ; steel windows and doors, Williams and Williams, Ltd. ; aluminium decking and felt roofing and lining, William Briggs and Sons, Ltd. ; asbestos sheeting and factory lining, Richardson Roofing Co., Ltd. ; suspended ceiling in administration block, Hall and Co., Ltd. ; York stone paving, vermiculite screeds, joinery and wrot iron balustrading, James Longley and Co., Ltd. ; cement glaze, Robbs Cement Enamel Finishes, Ltd. ; travelling crane (3 ton), Herbert Morris, Ltd. ; patent and side-wall glazing, S. Warner and Son, Ltd. ; fireproof doors, Dreadnought Fireproof Doors (1930), Ltd. ; hand-operated lifts, Hammond and Champness, Ltd. ; roller shutters, Fireproof Shutter and Door Co. ; shutter gates, Potter Rax, Ltd. ; w.c. cubicles (metal), Rowe Bros. and Co., Ltd.

Nominated suppliers were : facing bricks, A. H. Herbert and Co., Ltd. ; time office framing, Sommerfelds, Ltd. ; venetian blinds, J. Avery and Co. ; dome lights, S. Warner and Son, Ltd. ; ventilators, Colt Ventilation, Ltd. ; steel door frames, Henry Hope and Sons, Ltd. ; ironmongery, A. J. Binns, Ltd. ; timber doors, James Longley and Co., Ltd. ; sanitary fittings (vitreous china), Broad and Co., Ltd. ; sanitary fittings (stainless steel), Stitsons Sanitary Fittings, Ltd. ; drainage, Broad and Co., Ltd. ; and terra-cotta cills, Shaws Glazed Brick Co., Ltd.

The main front.

Library Block, Queen Elizabeth College, Campden Hill, W8

Architects : ADAMS, HOLDEN & PEARSON, FF.RIBA

Quantity Surveyors	*Structural Engineers*	*Builders*
NORTHCROFT, NEIGHBOUR & NICHOLSON	*R. TRAVERS MORGAN & PARTNERS*	*WILLIAM WILLETT, LTD.*

THE Library Block of Queen Elizabeth College, Campden Hill-road, W8, was destroyed by enemy action in 1944, and is now rebuilt, with some revisions to the original design, mainly to suit the altered internal planning. The same materials as the rest of the college have been used, viz., Colliers old-English red facing bricks with Lawrence's red bricks for the quoins; painted sash windows divided into rectangles by glazing bars; and Portland stone plinths, cornices, architraves, balustrades, etc. The new library block was opened by HRH Princess Alice, last autumn.

The main entrance to the college forms a central feature of Portland stone to the Campden Hill-road elevation, with a carved motif over the entrance embracing the window above, all on centre with the wrought-iron gates. This elevation is flanked by stone features; one of these is used as an entrance to the large hall on the first floor. Above the second floor, the main stone cornice is continued with its modillion treatment. At the third-floor level, windows were introduced to light the physics laboratories.

Circular windows, with a carved stone floral design at each side, are placed immediately above the doorways at ground level. Five central windows on the first and second floor are repeated on the Quadrangle elevations, as the large hall and the library occupy the full width of the new building. The entrance hall corridor connects the administration with the north and south staircases. The panelled walls are painted to accord with the Korkoid flooring of a large chequered design. In the committee room on the ground floor the moulded ceiling and walls are painted, also the chimney-piece which has a steel fireplace and a surround of Beige marble inset with Ashburton marble. The flooring is of teak blocks.

The large hall on the first floor is planned for lectures and as a small theatre to seat about 300 persons. The stage and platform at one level are constructed of Burma teak and Gurjun flooring. The joinery to the doors and window radiator cases is of Burma teak with painted panelling to the main wall surfaces. The seating is of a nesting type easily movable for the hall to be used for dancing; an Indian Gurjun floor has been installed for this purpose. Provision has been made for cinema projection.

Indirect lighting is from pendant fittings in the panels between the beams of the modelled plaster ceiling. Burma teak tables, lined with green leather and chairs upholstered in green leather, are provided for the platform. Green curtains of a woollen fabric hang at the windows and similarly to the proscenium arch at the back of the platform.

The Library, for approximately 10,000 books on the second floor, has English walnut panelling with open shelf bookcases, lined with Sapeli, between the windows and at the southern end. Recesses are formed by a double-sided bookcase being fixed at right-angles between each window. The floor is finished with cork tiles. At the northern end there are two recesses for the card catalogue index cabinets.

The furniture is of English walnut, the writing surfaces of the readers' tables being lined with blue linoleum, and readers' chairs have upholstered seats

The main front, showing entrance gates from Campden Hill-road.

View from quadrangle.

covered with blue leather. For the general lighting an indirect ceiling pendant is placed in the centre of each panel of the enriched plaster ceiling. The readers' tables have table lamps and recessed lighting. The third floor is equipped with a lecture room, laboratories and research rooms for the physics department. The college, until quite recently, was called King's College of Household and Social Science, and is a women's college of the University of London.

CONSTRUCTION

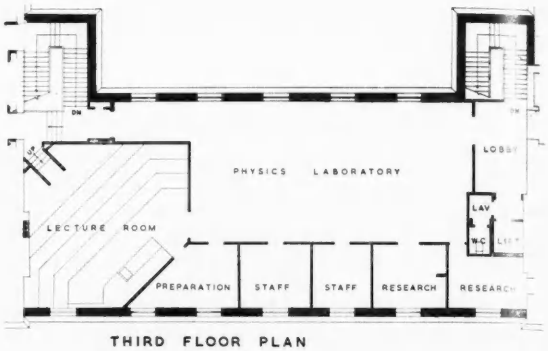
The excavation was taken into the blue clay. Blinding concrete 6 in. thick was laid over the excavations, and the whole excavation was tanked with asphalt 1 in. thick, including the backs of retaining walls. Underpinning to the laboratory block adjacent to the new construction was necessary because of the lower level of the new basement. Reinforced concrete column bases average 3 ft. thick, together with a 6 in. thick r.c. diaphragm, complete the foundations.

The frame was composed of reinforced concrete columns and beams with $7\frac{1}{2}$ in. hollow tile floors, with screed 2 in. thick to allow for electrical conduits. The north and south staircases are solid reinforced concrete with slip tile soffit to provide key to plaster, and are finished with Burma teak treads and risers, wrought-iron balustrades and teak handrail. The roof is of normal r.c. construction with spaces for lantern lights, and screeded to slight falls and asphalted.

The brickwork matches the existing building and is built in Flemish bond with Colliers old-English red facings and Lawrence's red rubbers for jambs and arches to window openings. The base course, string courses, moulded jambs to doorways and feature windows, the cornice and capping are all of Portland stone.

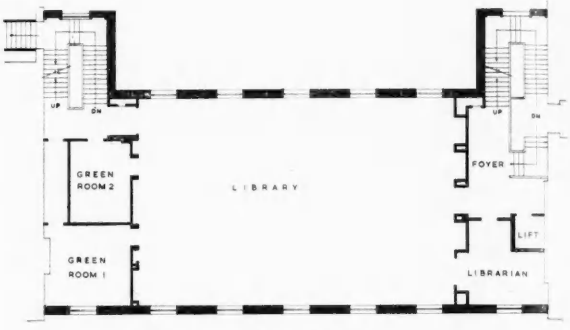
The building is heated by hot water through radiators in window backs, and the mains are run from the existing boiler house in the east block, and are accommodated in special ducts in the new block.

The physics laboratory.

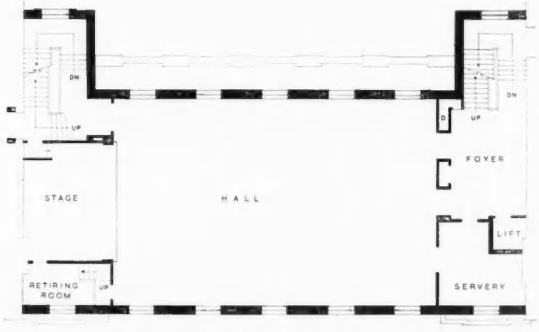


THIRD FLOOR PLAN

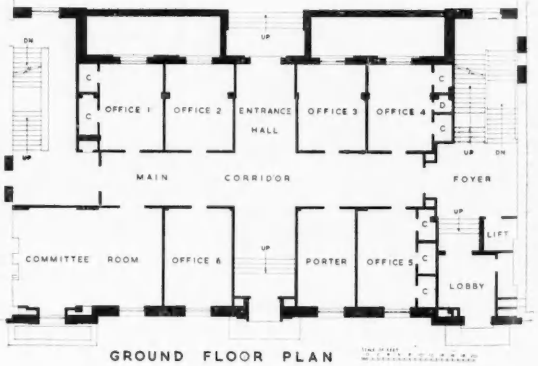
Detail of staircase window.



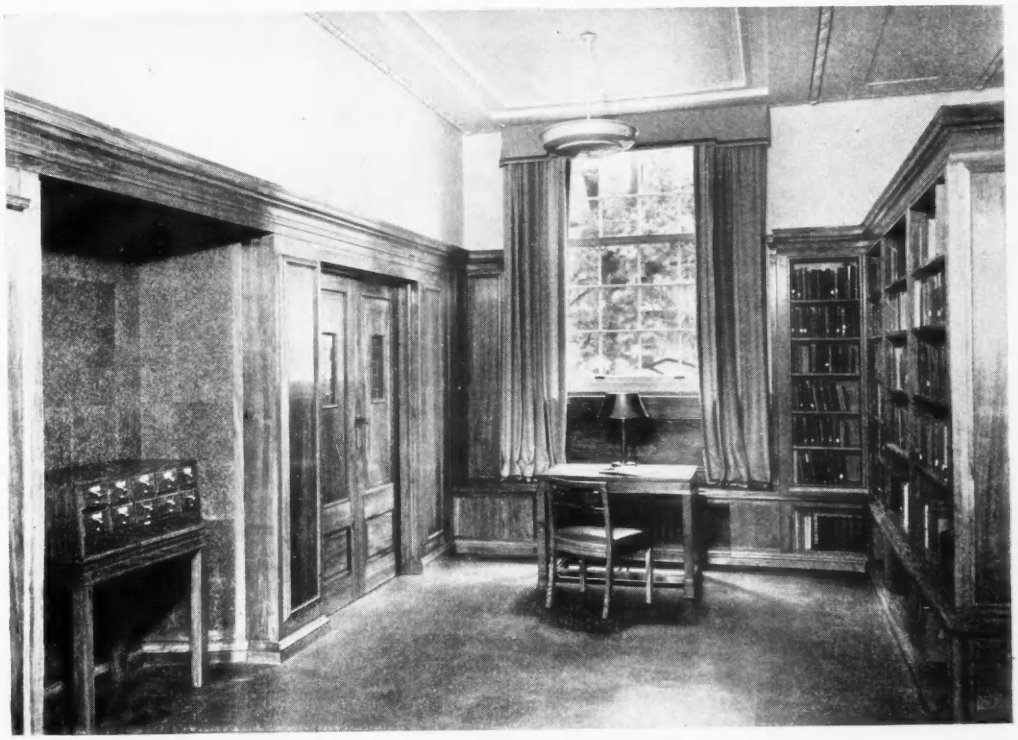
SECOND FLOOR PLAN



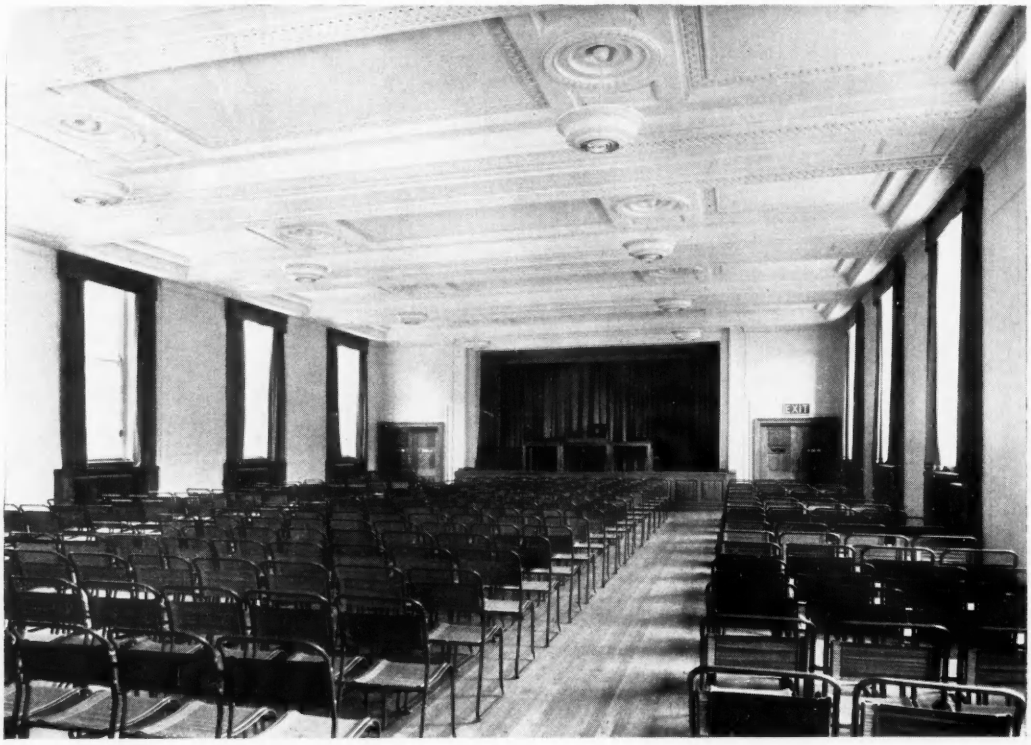
FIRST FLOOR PLAN



GROUND FLOOR PLAN



View in Library bay. Below : General view of Library.



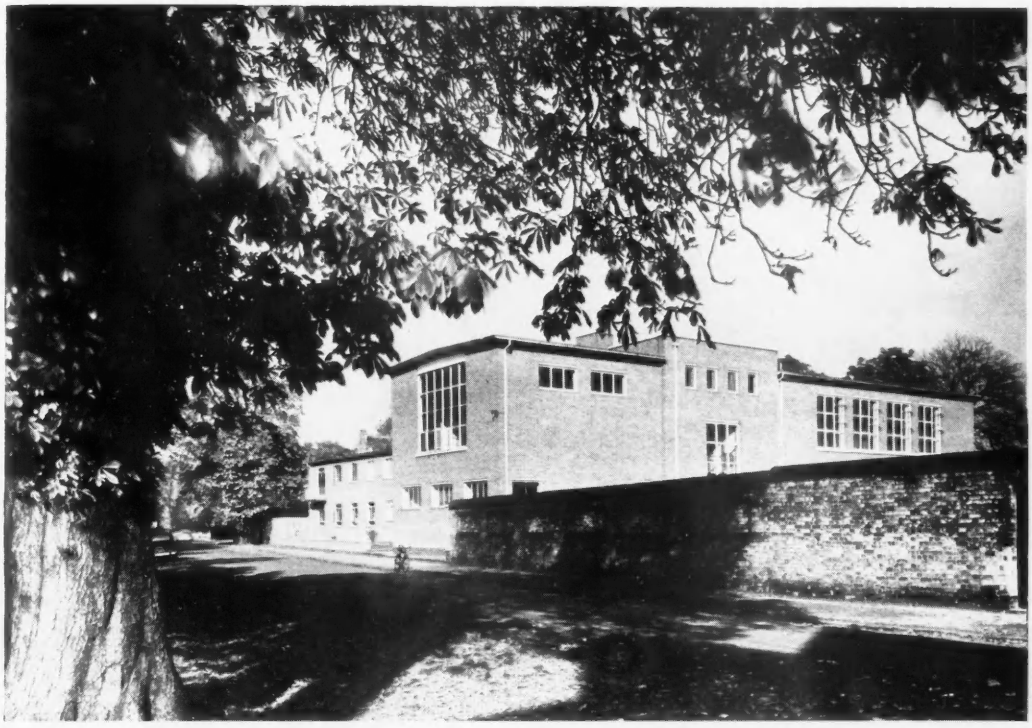
The hall, looking towards the stage.

Water, gas and AC and DC electricity and drainage services serving the physics laboratory on the third floor are housed in special ducts. Water, gas and hot and cold water service pipes are accessible throughout their length by means of ducts in walls or by boxed skirtings at floor or bench level with removable covers.

The plastering to walls and ceiling is in lime and hair three-coat work, with fine plaster cornices and dadoes in Keene's cement. The ceilings to the hall and library are in cast plaster and the timber grounds and framework to which this is fixed are supported on non-ferrous bolts through the constructional slab.

SUB-CONTRACTORS AND SUPPLIERS were: RC frames and floors, Helical Bar and Engineering Co., Ltd.; Portland stone, Bath and Portland Stone Firms, Ltd.; metal windows, Crittall Manufacturing Co., Ltd.; asphalt, General Asphalte Co., Ltd.; heating and hot water services, J. Slater and Co., Ltd.; electrical installation, Rashleigh Phipps and Co., Ltd.; cork tile flooring, Korkoid Decorative Floors, Ltd.; teak and strip floors, Acme Flooring Co., Ltd., Barking, Essex; sanitary fittings, Wiggins-Sankey, Ltd.; lift, Waygood-Otis, Ltd.; gas installation, North Thames Gas Board; plumbing, Stitson, White and Co., Ltd.; iron balustrade to staircases, Light Steelwork, Ltd.; tiling, Carter and Co., Ltd.; ironmongery, James Gibbons, Ltd.; fibrous plaster ceilings, George Jackson and Sons, Ltd.; lightning conductors, J. W. Gray and Sons, Ltd.; lantern lights, Luxfer, Ltd.; laboratory fittings, Wm. Mason and Son, Ltd.; stone carving, H. H. Martyn and Co., Ltd.; electric light fittings in hall and library, Troughton and Young (Lighting), Ltd.; general electric light fittings, General Electric Co., Ltd.; fire appliances, Merryweather and Sons, Ltd.; fireplace in committee room, Bratt Colbran, Ltd.; blinds, J. Avery and Co., Ltd.; furniture in library and large hall, Heal's Contracts, Ltd.; chairs and curtains in library and curtains in hall, Russell Furnishings, Ltd.; nesting chairs, Pel, Ltd.; wood interior for library bookcases, J. L. Green and Vardy, Ltd.; repairs to W.1. entrance gates, Adrian Stokes, Ltd.; and forecourt and drive, Limmer and Trinidad Lake Asphalt Co., Ltd.; joinery, Walter Lawrence and Son, Ltd.

LIBRARY BLOCK,
QUEEN ELIZABETH COLLEGE,
CAMPDEN HILL, W8



View from the south-east.

THE UNIVERSITY OF CAMBRIDGE

Department of Human Ecology and University Health Service

Architect
D. WYN ROBERTS, MA, ARIBA

Quantity Surveyors
DAVIS, BELFIELD & EVEREST

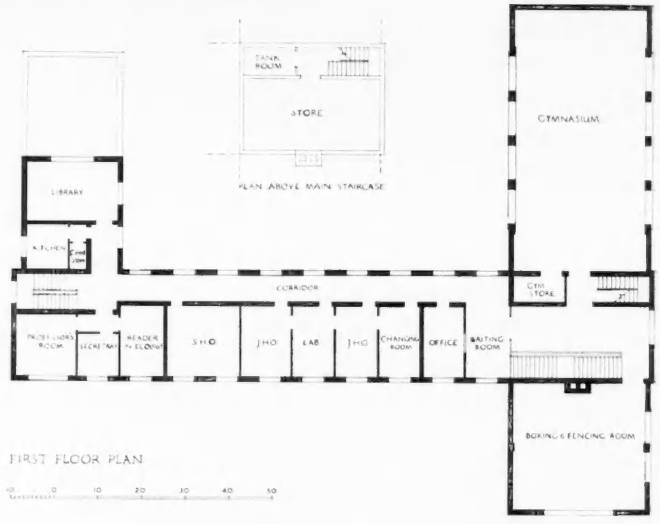
Builders
COULSON & COMPANY
General Foreman
W. PIPE

THE purpose of this building is twofold in that it contains two departments. The Department of Human Ecology is concerned with the relation of the incidence of disease to environment and occupations, while the University Health Service is concerned with the maintenance of the health of the undergraduates and administrative officers and assistants of the University.

The Department of Human Ecology is housed at the north end of the building in normal office accommodation. The University Health Service has administrative offices, medical inspection rooms, X-ray theatre and dark room; the dressing-room to the X-ray room is also used for physiotherapy treatment. The Health Service is also responsible for the gymnasium and boxing-room which are supervised by a permanent physical training instructor. The gymnasium is also used for lawn tennis practice, fencing and netball, while the running tracks at Fenners are immediately adjacent to the changing rooms. The University Health Service exists for the maintenance of health and not in any way for the curing of disease.

The building was built at a time when supplies of steel were short, and it was stipulated that as

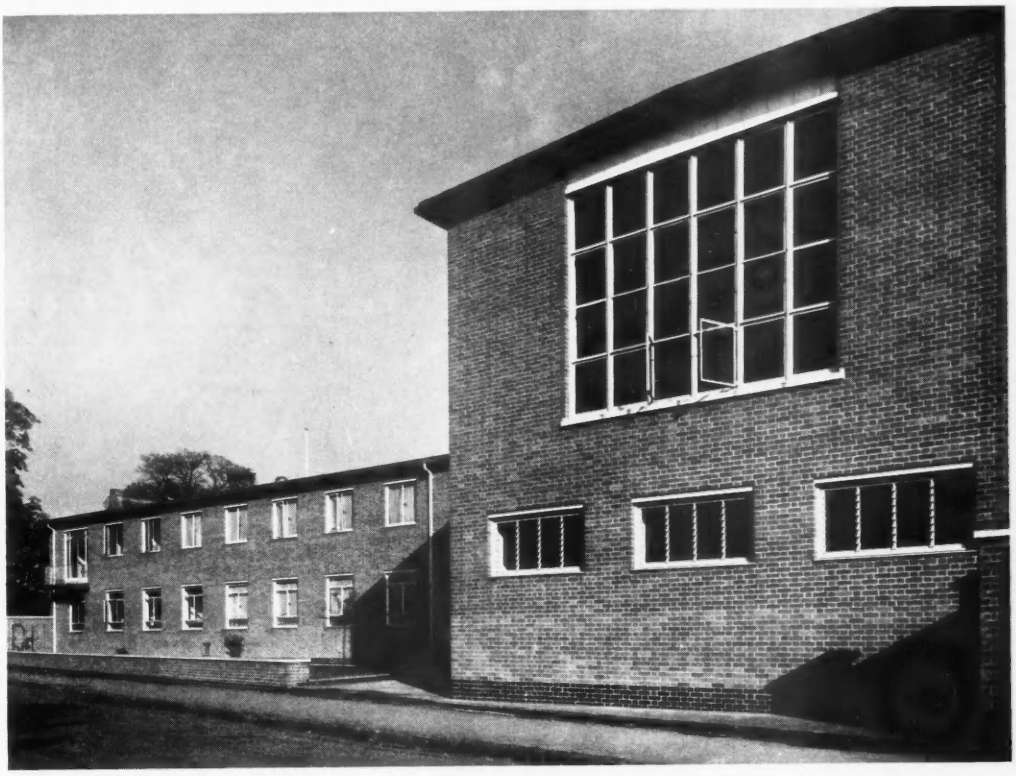
The upper hall.



little steel as possible should be used; the character of the building, therefore, is essentially that resulting from load-bearing walls. The building was purposely kept simple and modest in appearance.

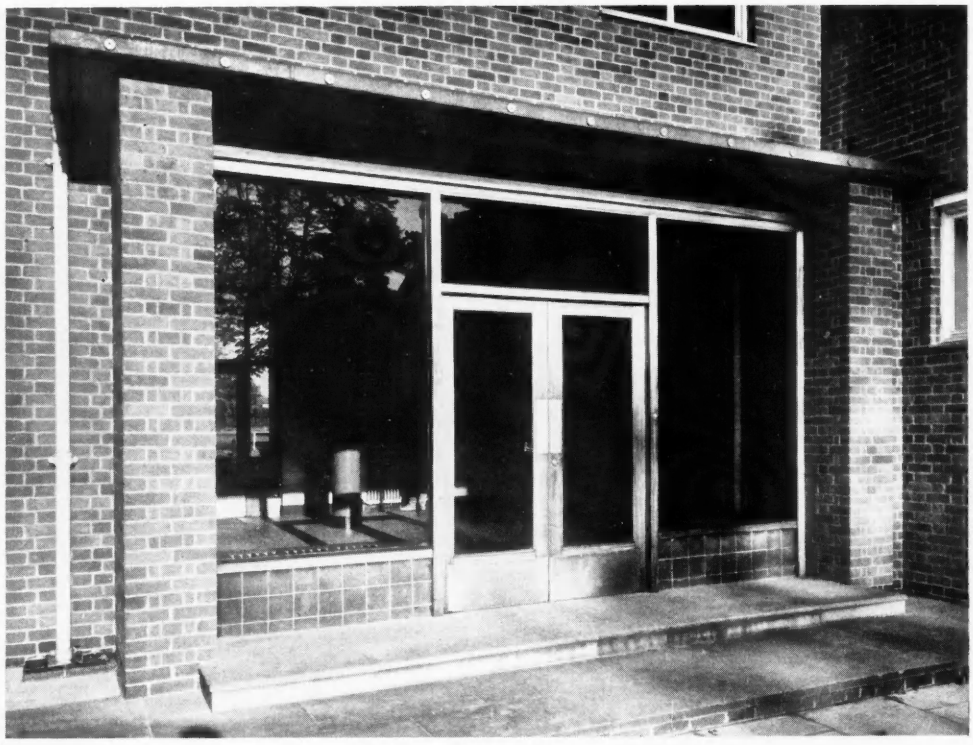
Sub-contractors and suppliers engaged on the work were as follows:

Concrete floors and roof, Kleine Floors; bricks, Colliers' Berkshire Red; asphalt to roofs and basement, Cambridge Asphalt Co.; windows, Crittall Manufacturing Co.; floor finishes: wood, Horsley Smith and Co., cork, Holmes (Newark); tiled walls and floor, Carter and Co.; stone floors, Hornton Stone Quarries; plasterers, George Cook and Co.; gymnasium equipment, Esavian, Ltd.; electric wiring, Electric Wiring Co.; furniture, Russell Furnishings; lettering, David Kindersley; and fabrics, Miss Hilary Bourne.

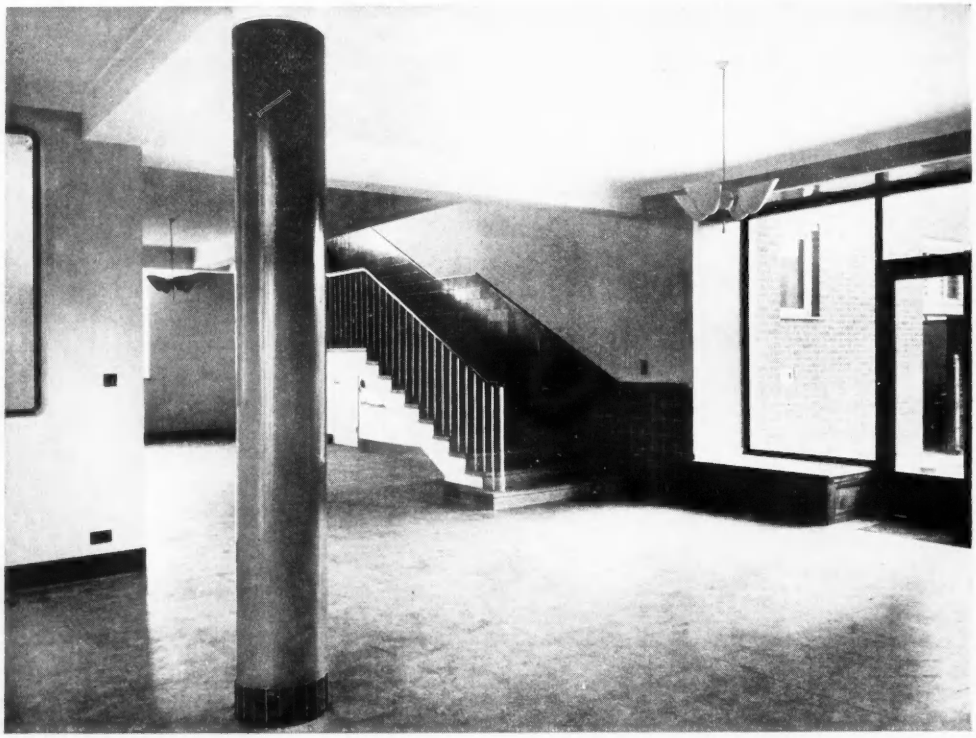


View from south-east showing boxing and fencing room.

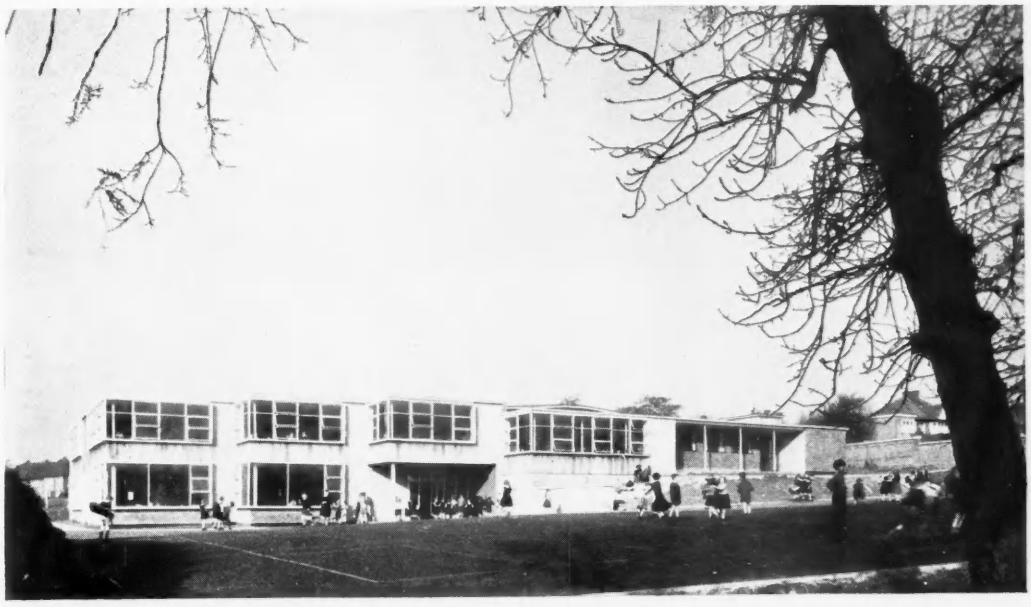
The elevation to Gresham-road from south-west.



The main entrance. Below : The entrance hall.



DEPARTMENT OF HUMAN ECOLOGY & UNIVERSITY HEALTH SERVICE, CAMBRIDGE



View from playground.

Clitterhouse Primary School, Hendon, for Middlesex CC

County Architect
C. G. STILLMAN, FRIBA

Area Architect
C. E. HARTLAND, ARIBA

Architect in charge of job
J. A. FORD, ARIBA

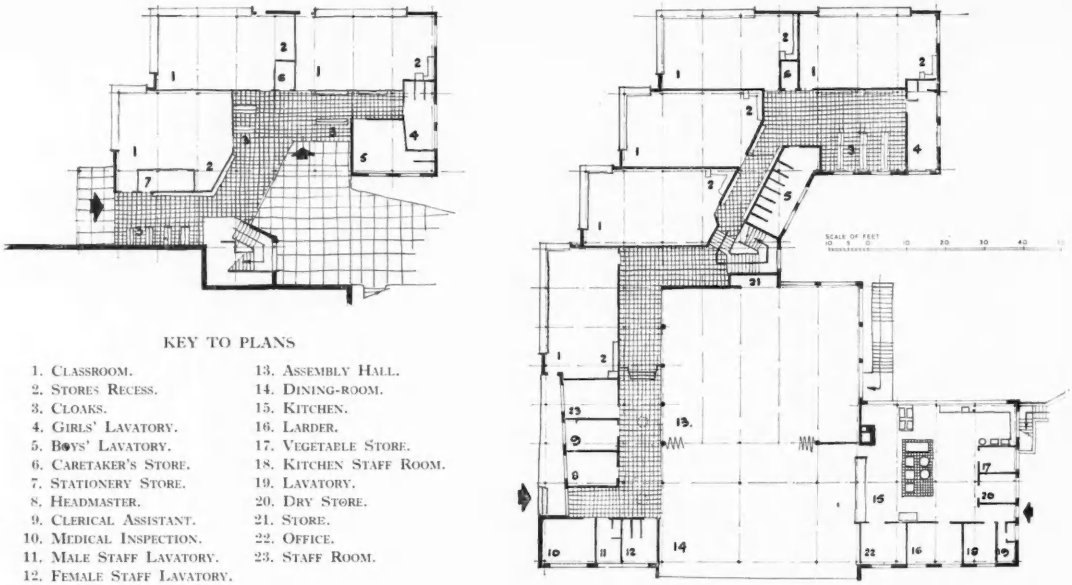
Builders
H. WATTS & SON

THIS is a school for 320 junior children, built to expand an existing school which will now be used for infant children only. The site of 3.63 acres at Claremont-road has a steep fall to the south. Apart from a few trees on the west side, it is bounded by housing. The building is partly single and partly two storey, in order to take advantage of the sloping site and to allow as much playground area as possible in a restricted space. There are three levels in the building; the main part of the school—including the assembly and dining halls, kitchen, staff rooms and one classroom—is on the middle level; three classrooms, cloakrooms, lavatories and stores are on the lowest level; and four classrooms with cloaks and lavatories on the top.

The dining-room and assembly hall are separated by a sliding folding screen; the combined portable stage and climbing frame (provided instead of a fixed stage by request) can be placed in the dining-room, thus making use of the sliding doors as a proscenium. Climbing ropes are provided in the assembly hall. The classrooms on the east side of the building are stepped to give one south window to each room, and all those on the higher level are provided with roof lights.

Cost: Per place, this was £149, compared with the permitted cost of £170 when the plans were prepared. Considerable additional cost for the foundations, which included a large retaining wall, was incurred because of the steeply sloping site. The dining hall and kitchen are large enough to serve the children still at the old building.

Construction: The retaining wall, originally planned to be in reinforced concrete, was constructed in engineering bricks, owing to the current shortage of steel rods. It is faced externally with regular coursed Clipsham stone in random widths. The lower ground floor consists of an r.c. frame, in 20 ft. by 10 ft. bays, with 8-in. circular columns, and ¾-in. fibreboard suspended ceiling. On the first floor the frame is of light steel tubes with steel

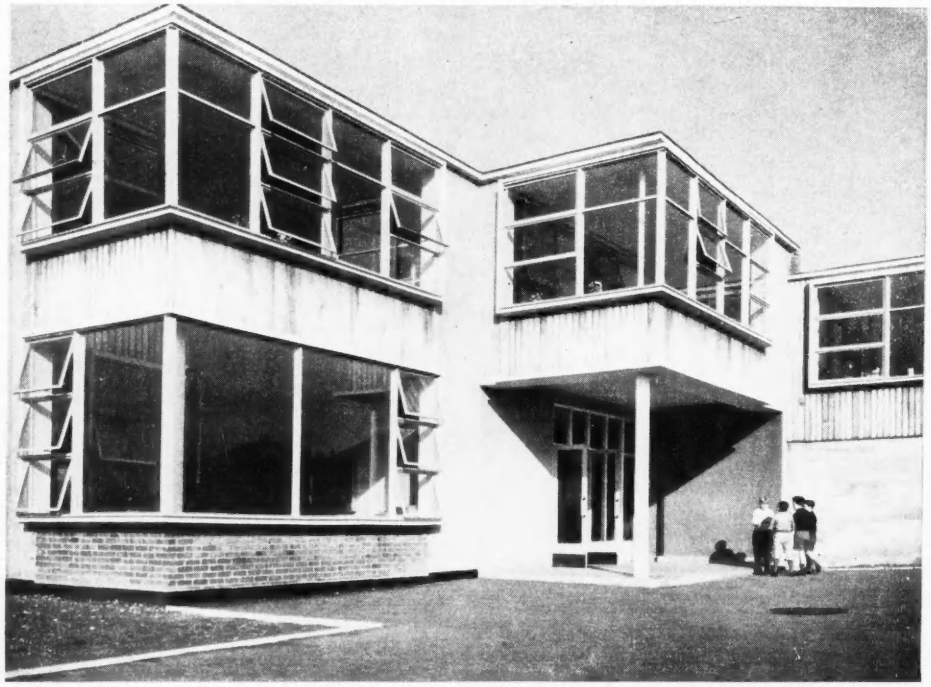


KEY TO PLANS

1. Classroom.
2. Stores Recess.
3. Cloaks.
4. Girls' Lavatory.
5. Boys' Lavatory.
6. Caretaker's Store.
7. Stationery Store.
8. Headmaster.
9. Clerical Assistant.
10. Medical Inspection.
11. Male Staff Lavatory.
12. Female Staff Lavatory.
13. Assembly Hall.
14. Dining-room.
15. Kitchen.
16. Larder.
17. Vegetable Store.
18. Kitchen Staff Room.
19. Lavatory.
20. Dry Store.
21. Store.
22. Office.
23. Staff Room.

beams and double angles over, taking channel-reinforced woodwool slabs; there is a 2-in. foamed slag screed and 2-ply felt roof finish. Heating is by low-pressure hot-water system.

Finishes: Internal partitions are in precast plaster and wall finishes used are washable distemper, oil paint and wallpaper. A jointless thermoplastic floor finish is used in classrooms, dining hall and staff rooms. Corridors are finished in concrete tiles with a wood-fibre filler, and the assembly hall is 1-in. nominal Muhuhu wood blocks. Lavatories are in granolithic.



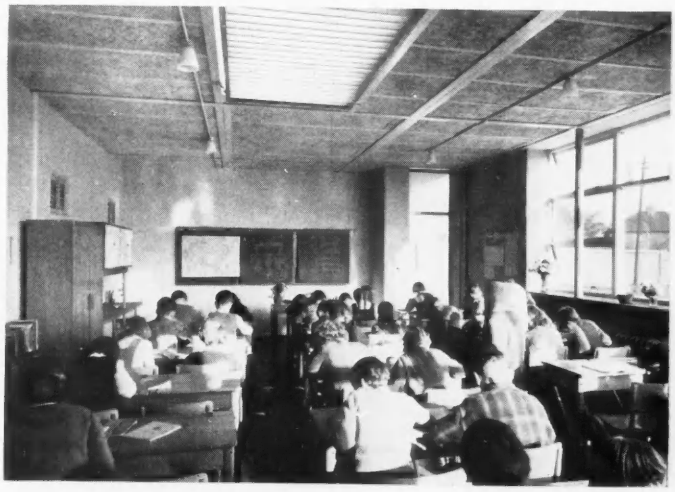
Detail of classrooms.

Externally, a number of materials have been used in addition to the Clipsham stone already mentioned, giving an interesting variety of textures. These include vertical cedar weather boarding on the assembly hall, facing brickwork and panels of limestone rendering in contrasting colours.

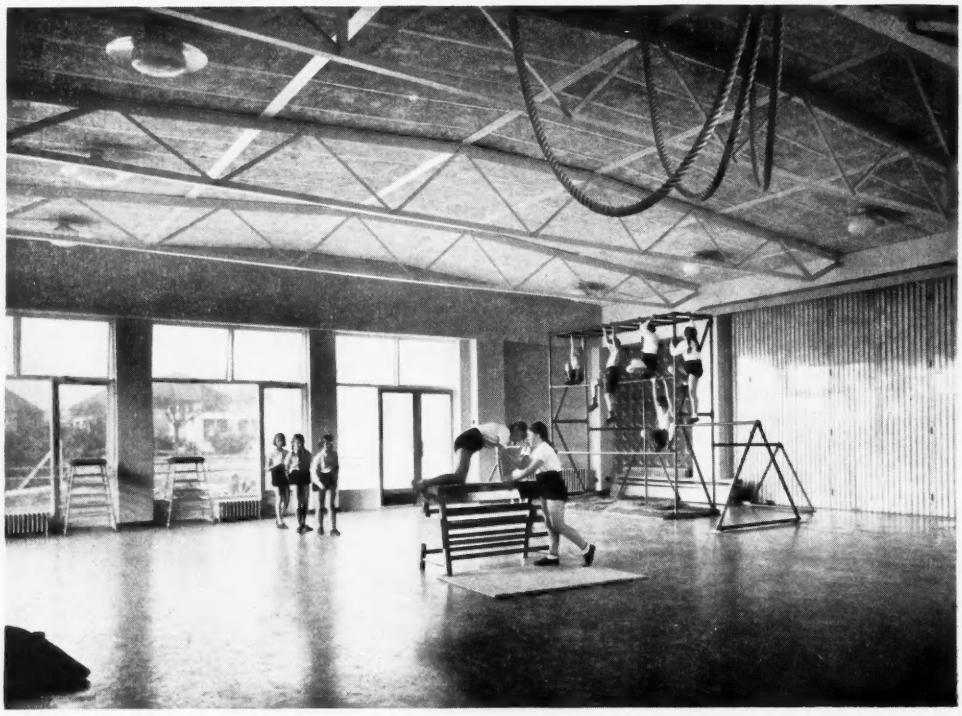
Sub-contractors and suppliers were :

Heating, Deane and Beale, Ltd. ; electrical, Grierson, Ltd. ; wood casements, Walter Lawrence and Co., Ltd. ; woodwool slabs, Supalith ; felt roofing and asphalt tanking, Permanite, Ltd. ; painting, South London Decorators, Ltd. ; paint supplied by Vulcan Products, Ltd. ; precast plaster slabs, Bellrock, fixed by John Kent, Ltd. ; plastering, John Kent, Ltd. ; ironmongery, N. F. Ramsay and Co. ; woodblock flooring, Vigers Bros., Ltd.; concrete tiles, Caledonian Concrete, Ltd. ; jointless thermoplastic flooring, Haskell Robertson, Ltd. ; sanitary fittings, plumbing, John Bolding, Ltd. ; playgrounds, Glossops ; false ceilings, Roof and Lining Construction Co., Ltd. ; cellar flaps, Clark Hunt, Ltd. ; " Phenoglaze " polish, supplied by New Finishes, Ltd. ; servery shutter, Shutter Contractors, Ltd. ; reinforced concrete, Indented Bar, Ltd. ; steel, Lindsay's Paddington Ironworks ; fencing, Peerless Fencing, Ltd. ; " Stonite " rendering, Callow and Keppich, Ltd., supplied by New Floor Installations ; balustrading, The General Iron Foundry Co., Ltd. ; wallpapers, John Lines, Sanderson, and Coles: lithographs, J. Lyons and Co.; cloakroom fittings, George Hammer and Sons, Ltd. ; portable stage, J. Greig and Sons ; terrazzo paving, Art Pavements and Decorations, Ltd. ; lavatory partitions, W. B. Simpson and Sons, Ltd. ; and rainwater pipes, supplied by Vitreflex, Ltd.

View from staircase half-landing. The sculpture is by John Napper.

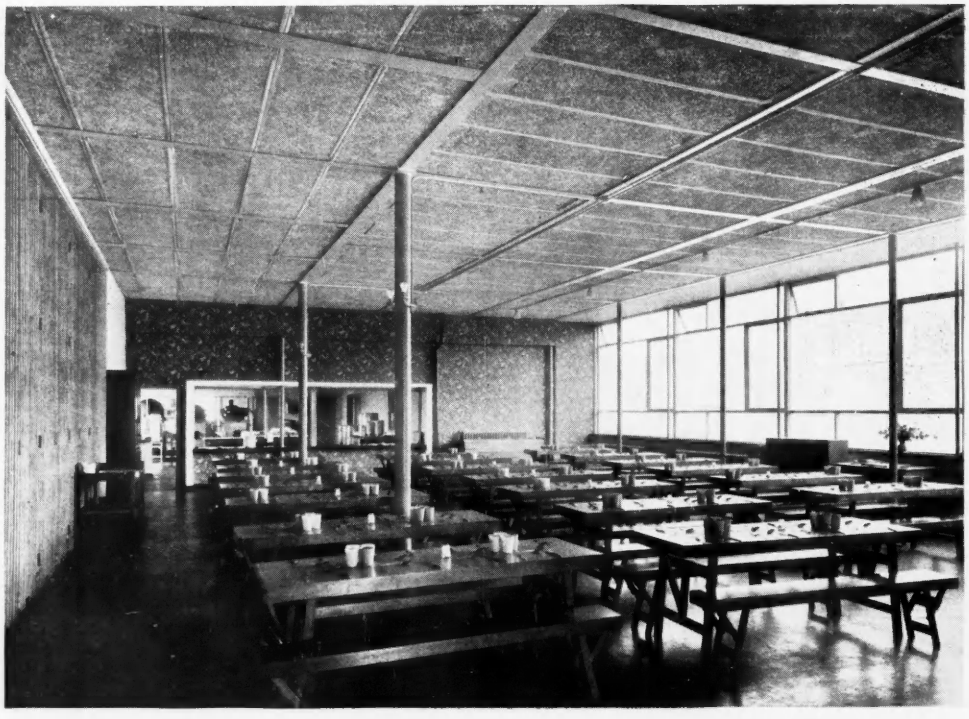


A typical classroom.



Assembly room. Below : Dining hall.

CLITTERHOUSE PRIMARY SCHOOL, HENDON, FOR MIDDLESEX CC



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NOTES & NEWS

MODULES FOR SCHOOLS

TO me at least (writes Basil Marriott) the Modular Society's visit to a day nursery on January 9 was one of the first sights of Module in Action, at command of a strong team of which members representing the Hertfordshire CC architects, the consulting engineers, and the production firm spoke and answered our questions. And an impressive performance it was. The nursery is at Watford.

The building is of timber construction lined with hardboard, designed on a 40 in. grid, and incorporates a variant of the Punt system. Its application here is so eminently logical, and the incidental problems so sensibly coped with, that there is little room for criticism except of superficials. Personally I am a little unhappy, admittedly on grounds of pure appearance, about the rather deep fascia which the edge of the punt shows on a single-storey elevation, when the eaves projection is small.

Conventionally one might call this "out of scale," but even those of my generation can surely retain enough flexibility to adjust the eye to new aesthetic values which will inevitably grow from a concept so clearly the overdue solution to many problems. I was pleasantly surprised to find that the clear expression of the grid "pattern" produced a peculiarly restful rhythm visually. This, integrating interior and exterior, was a far more satisfactory "ground bass" (to borrow from music) than, for instance, the forced fenestration the pre-shrunk Georgian boys rely upon.

It is I suppose a matter of composing in tempo and rhythm rather than melody, and as such is, incidentally, likely to appeal to a generation of laymen having an intelligent appreciation of its musical counterpart, once the principle is clearly explained to them—as is vital, if the debâcle of popular mistaking of a practical principle for an artistic "ism" is to be avoided.

I was amused to note that a climbing-frame which, though vaguely "modular" was not of the same grid, stuck out like a sore thumb from a composition where the eye subconsciously adopted the rhythm and found things like joints and changes of direction exactly where it expected them to be.

THE MODULAR SOCIETY

ANY LINGERING impression that modular co-ordination is a purely academic study is quickly dispelled at the Modular Society's meetings, which attract a growing and formidable cross-section of technical brain-power. This includes industrialists who really are hard-headed enough to recognise their mutually complementary relationship to the architectural progressives and pace-setters whom one naturally expects to find there. This is rare: even rarer, a common language seems already to have been established, so that designers, technicians and administrators seem to take each other's point of view on trust.

RIBA EXHIBITION

THE RIBA exhibition "Home and Surroundings" is to be presented in Cambridge by the Cambridge Chapter of the Essex, Cambridge and Hertfordshire Society of Architects. It will be opened at the Eastern Area Gas Board showrooms, Sidney-street, on January 21. The exhibition will remain open to the public until January 30.

APPEAL FOR FUNDS

MR. GERALD HILL, president of the London Master Builders Association, by his personal appeal to members of the Association for support for the City and Guilds of L ndon Institute, which is in need of financial aid, has given a good lead to the industry.

Mr. Hill has invited his members to contribute up to £25 each to the City and Guilds fund. This is in addition to generous donations which the LMBA has already made. British industry has benefited to a considerable extent by the work of the Institute and it is therefore right and proper that industry should show its gratitude in this time of need in a practical manner.

The Institute's activities have increased enormously during the past 20 years but its income has not kept pace with this expansion. Between £3,000 and £4,000 is needed each year to maintain the existing examinations in building subjects alone. It is to be hoped that Mr. Hill will be well satisfied with the response he receives.

COMING EVENTS

MONDAY, JANUARY 18

INSTITUTE OF QUANTITY SURVEYORS.—"Painting in Construction," by Mr. P. J. Gay. Caxton Hall, Westminster. 6.30 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—"The Role of the Consulting Engineer," by Mr. T. G. N. Haldane, MA, IEE, Savoy-place, WC2. 5.30 p.m.

TUESDAY, JANUARY 19

RIBA.—"Economy in Building," by Mr. H. F. Broughton, ARIBA, 66, Portland-place, W1. 6 p.m.

HOUSING CENTRE.—"Transfers Exchanges and Rents," by Mr. Henry Brooke, MP. 13, Suffolk-street, SW1. 6 p.m.

DEPARTMENT OF HEALTH FOR SCOTLAND.—A lecture and discussion on Codes of Practice for brickwork and load-bearing walls, by Dr. F. G. Thomas, MICE, MIStruct.E. St. Andrew's House, Edinburgh. 2.30 p.m.

WEDNESDAY, JANUARY 20

ROYAL SOCIETY OF ARTS.—"The Royal College of Art: Looking Ahead," by Mr. Robin Darwin. RSA, John Adam-street, Adelphi, WC2. 2.30 p.m.

REINFORCED CONCRETE ASSOCIATION.—"Recent Research in Reinforced Concrete at Imperial College," by Professor A. L. C. Baker, MICE, MIStructE. 11, Upper Belgrave-street, SW1. 6 p.m.

THURSDAY, JANUARY 21

INSTITUTE OF WELDING.—"Steel Making and Welding," by Dr. L. Reeve. 11, Upper Belgrave-street, SW1. 7.30 p.m.

FRIDAY, JANUARY 22

ESSEX, CAMBRIDGE AND HERTFORDSHIRE SOCIETY OF ARCHITECTS.—RIBA exhibition "Home and Surroundings." Eastern Gas Board showrooms, Sidney-street, Cambridge. 9 a.m. to 1 p.m. and 2.15 p.m. to 8 p.m. Continuing until January 30.

SOUTHERN COUNTIES FEDERATION OF BUILDING TRADES EMPLOYERS.—AGM and luncheon. Connaught Rooms, Great Queen-street, WC2. 1.15 p.m.

INSTITUTE OF QUANTITY SURVEYORS (EAST ANGLIAN BRANCH).—Dinner and dance. Arlington Rooms, Norwich.

SOCIETY OF CHEMICAL INDUSTRY.—Demonstrations of methods of protecting iron and steel from corrosion. Battersea Polytechnic. 10 a.m. to 4 p.m.

SATURDAY, JANUARY 23

ECCLESIOLOGICAL SOCIETY.—"The Towering Cathedral—The Crown of the City," by Mr. Gerald Cobb, FSA. 2, Bloomsbury-square, WC1. 3 p.m.

Mr. Arthur George Stephenson, CMG, MC, FRIBA, AMTPI, the Australian architect who (as reported in our issue of January 1) has been awarded the Royal Gold Medal for Architecture, 1954.

THE WOKINGHAM EXPERIMENT

THE RIBA COUNCIL, at its last meeting, decided not to accept an invitation from the Association of Education Committees to nominate two architects to the committee which the AEC has set up to report on the Wokingham experimental prefabricated school designed by the Architects' branch of the Ministry of Education.

AN AMALGAMATION

APPROVAL has been given by Her Majesty's Privy Council to the terms of an agreement made between the Councils of the Royal Institution of Chartered Surveyors and the Institute of Mining Surveyors by which the latter society amalgamated with the Royal Institution on December 31, last.

By this fusion of the two societies which have hitherto catered for the practice, education and training of mining surveyors that branch of the surveyor's profession will be unified and strengthened. Henceforward all mining surveyors aspiring to the highest professional qualification will be required to pass the examinations of the RICS. Thus, it is confidently expected that the amalgamation will give an impetus to mining surveying generally and enhance the standard of practice in a complex field, vital to efficiency and safety in mining operations.

AA SCHOOL

THE ENTRANCE examination for admission to the first year of the Architectural Association School of Architecture will be held on March 29 and the closing date for applications is March 1. The selection board dealing with applications for admission to years other than first will meet on May 3, and applications in this case must be received by April 1. Particulars from the Principal of the School, 34-36, Bedford-square, WC1.

SYDNEY UNIVERSITY POST

THE FIRST professor to occupy the chair of architectural science at Sydney University has arrived in Australia. He is Professor H. J. Cowan, who has been a lecturer in civil engineering and a special lecturer in architecture at the University of Sheffield.

HISTORIC BUILDINGS

THE VIEW was expressed by Sir James Mann, PSA, in an address to the Georgian Group at their annual meeting last year that the 1953 Historic Buildings and Ancient Monuments Act did little more than arm the Minister of Works with the powers necessary to administer the moneys which the Chancellor of the Exchequer had promised for the preservation of historic buildings. The Bill had been introduced late in the session, discussion had been limited and amendments discouraged. It was not the co-ordinating measure that the Group had been looking for, but on the contrary had set up three new official bodies with powers and functions far different from those recommended in the Gowers Report. None the less, the Act was welcomed by the Group as an interim measure.

IAAS DINNER AND DANCE

THE London and Home Counties Branch of the IAAS will hold their annual dinner-dance at the Park Lane Hotel, W1, on Friday, January 29. Reception 6.30 for 7 p.m. Tickets, price 35s., are obtainable from the General Secretary, IAAS, 75, Eaton-place, SW1.

ARCHITECT'S ESTATE

SIR ARNOLD THORNELY, FRIBA, of Eaton Park-road, Cobham, Surrey, left estate of £89,450.

BATH ASSEMBLY ROOMS

THE NATIONAL TRUST have been formally notified of Bath City Council's decision to disclaim the 75-year lease of the Assembly Rooms, which means that the Trust must now find a use for the buildings and provide for their upkeep from their own funds.

The Assembly Rooms were destroyed by enemy action in April, 1942, and their proposed restoration has caused controversy. The Trust take the view that the rooms should be rebuilt exactly as they were, but the Council have proposed a modified building, to include a concert hall.

Mr. J. F. W. Rathbone, secretary of the National Trust, has stated that he has instructed his legal adviser to serve on the Bath City Council a notice to avoid such a disclaimer. The effect of the notice would be that if the Assembly Rooms were rebuilt exactly as they were before the lease expired the Council would be liable under their lease covenants.

It is understood that Professor A. E. Richardson, RA, FRIBA, the Trust's architect, has been negotiating with the War Damage Commission for a cost of works payment to rebuild the rooms, and to return them to their original state.

VACANT POST

GLAMORGAN COUNTY COUNCIL invite applications by February 2 for the post of Deputy County Architect. Salary £1,750 rising to £2,000 per annum. Details advertised elsewhere in this issue.

PROFESSIONAL ANNOUNCEMENTS

The successor to the practice of the late William Milburn, FRIBA (Messrs. William and T. R. Milburn) of Sunderland, is MR. J. B. WILLEY, Dip.Arch (Dunelm), ARIBA, 69, Ormonde-street, Sunderland.

MESSRS. EASTMAN, PARTNERS, quantity surveyors, 21, The Grove, Slough, announce that as from January 1, they have taken their senior assistant, Mr. H. T. MUNDY, ARICS, into partnership.

MR. BRIAN E. FIELD, ARICS, AIArb., late of Messrs. Davis, Belfield and Everest, Newport, has commenced in private practice as a chartered quantity surveyor at 19, Commercial-street, Newport, Mon. (Tel. : Newport 66500).

FROM "THE BUILDER" OF 1854

Saturday, January 14, 1854

OPENINGS FOR HEATING BUILDINGS.—In warming public buildings, it is a great error to bring the heat into the apartment through openings *in* the floor quite level. The consequence of this arrangement is, that the dust and dirt fall through openings ; and very often the servants, in sweeping the apartments, put the dust down these openings, in order to save themselves the trouble of taking it away : the consequence of this is, that the current of air from the furnace or boiler sends the dust into the rooms again. The National Gallery is warmed on this plan, which may account for the great accumulation of dirt on the pictures. M. F.

COST-OF-BUILDING GRAPH

THE Cost-of-Building Graph, prepared by Mr. H. J. Venning, FRICS, which has been a feature of the New Year number of *The Builder* for several years, will appear early in the Spring, and will thus take in the statutory variation in wages under the sliding-scale to be decided in February.

COMPETITION NEWS

Crematorium, Kirkcaldy

THE general conditions for the competition for a crematorium at Dunniker Park, Kirkcaldy (some details of which were given in our issue of December 25 last), have been issued by the promoters, the Royal Burgh of Kirkcaldy, Fife. Dr. Ronald Bradbury, FRIBA, AMTPI, has been appointed to assess the competition and the premiums offered are : 1st, £300 ; 2nd, £200 ; 3rd, £100.

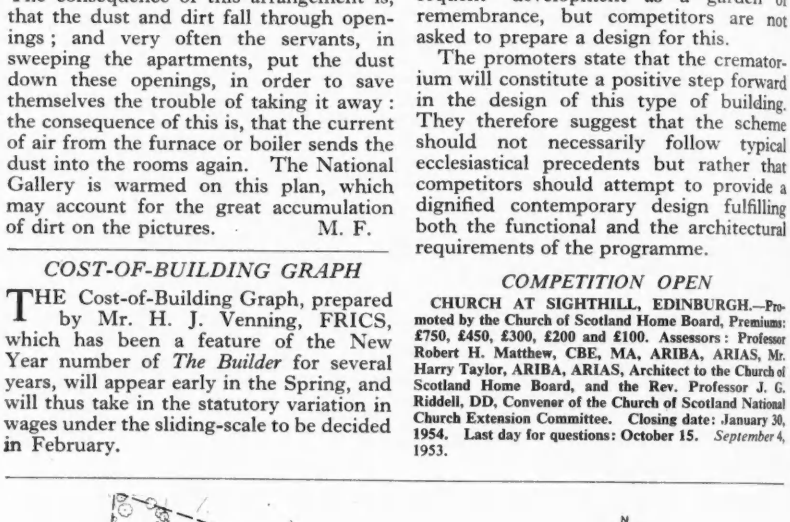
Any questions in connection with the competition should be addressed to the Town Clerk, Kirkcaldy, by February 20.

The whole area of the proposed site is heavily wooded apart from a portion to the north, and also the grass verges on each side of the driveway between the existing entrance lodge and the gates at the east end of the site. A new high school is to be erected in the field immediately to the south-east of the crematorium. The site plan shows an area of ground for subsequent development as a garden of remembrance, but competitors are not asked to prepare a design for this.

The promoters state that the crematorium will constitute a positive step forward in the design of this type of building. They therefore suggest that the scheme should not necessarily follow typical ecclesiastical precedents but rather that competitors should attempt to provide a dignified contemporary design fulfilling both the functional and the architectural requirements of the programme.

COMPETITION OPEN

CHURCH AT SIGHTHILL, EDINBURGH.—Promoted by the Church of Scotland Home Board, Premiums: £750, £450, £300, £200 and £100. Assessors : Professor Robert H. Matthew, CBE, MA, ARIBA, ARIAS, Mr. Harry Taylor, ARIBA, ARIAS, Architect to the Church of Scotland Home Board, and the Rev. Professor J. G. Riddell, DD, Convener of the Church of Scotland National Church Extension Committee. Closing date: January 30, 1954. Last day for questions: October 15. *September* 4, 1953.



Competition for crematorium, Kirkcaldy : Site plan. (*See this page.*)

CORRESPONDENCE

THE SPECIALIST TRADES

To the Editor of *The Builder*

SIR,—Your correspondent, Mr. Kenyon, has raised a most controversial subject but I am surprised that he gave no thought to the position of the quantity surveyor in relation to the bills of quantities.

All the forms of the RIBA Contract and most of the standard forms of contract stipulate that the contractor must always obtain the consent of the architect before any of the work can be "assigned or sub-let."

If tenders are obtained by invitation there would be no objection to reducing the number of PC items in the bills of quantities.

Where tenders are obtained in open competition, as so often happens, the architect has no advance knowledge of the contractor who will eventually carry out the work and it would seem desirable that he should control by selection many of the specialist trades which are vital to the efficient functioning of the building work.

It is suggested that heating requirements are to be specified and that the contractor "be required to produce a scheme to the architect." This could only be included in the bills of quantities as a provisional sum and no indication is given as to who shall assess the amount.

It might be advantageous if "The contractor carried out more of the work himself," but the RIBA Contract, Clause 21F, makes adequate provision for this to be done when PC sums are given.

In these days of sudden variations it appears probable that the use of PC sums will be extended rather than reduced because this retains the right of selection of such things as floor finishings, ironmongery, sanitary fittings, and all ornamental work until after the firm tender has been obtained. If necessary, less expensive items can be chosen according to the financial requirements of the building owner. Frequently the building owner is not prepared to decide on such items until costs are known.

Finally, it is certain that the elimination of PC sums will involve very much more work for all the contractors tendering and also delay the preparation of the original drawings and bills of quantities.

RONALD L. BREWIS [FIAS, AIQS].
12, Cathedral-road, Cardiff.

To the Editor of *The Builder*

SIR,—A second reading of Mr. Kenyon's letter convinces me that it is a well-directed leg-pull for the contractor.

A glance at the variety of sub-trades listed makes it apparent that few contractors are equipped to do all the specialist work themselves, and that only the larger contractors have the resources to take over from the architect the responsibilities Mr. Kenyon suggests might be off-loaded.

It does not seem feasible that efficient building—or good specialist work—could be attained by the contractor producing to the architect "samples of articles and workmanship" on the wholesale scale envisaged.

The growth, development and efficiency of the specialist trades has been achieved under a system of selection, healthy competition and a direct knowledge by the specialist sub-contractor of the particular requirements of the architect. To endeavour to transmit these through a contractor by means of samples of articles and workmanship would, I submit, be disastrous to all concerned with good and efficient building.

W. A. MEE.
16, Regency-street, Westminster, SW1.

To the Editor of *The Builder*

SIR,—We have read with great interest Mr. Arthur W. Kenyon's letter in your issue of January 1 referring to the nomination of specialist sub-contractors by the architect.

So far as we are concerned as actual fabricators we are definitely in favour of the present system, having particular regard to our products mentioned by Mr. Kenyon, viz.: ornamental ironwork, fire escapes, playground enclosures and the like which cover a wide field and are not likely to be produced by the ordinary building contractor in his own organisation. If the architect is to supply detail drawings for the builder to prepare his quotation, it means that all builders tendering will have to be furnished with details and they in turn will send them to the various specialists with whom they are in touch. Thus, we and our competitors may each be in the position of having to submit detailed quotations to as many as ten or more builders with the consequent multiplication of work and enhanced costs to be reflected in later prices.

With the present system we prepare one quotation in competition and know that we shall stand or fall on a keen price.

We are writing from our point of view, and it may be that other trades will lend themselves more advantageously to Mr. Kenyon's idea. To go further, we welcome and enjoy our association with architects which also gives us a sense of security in the certification of payments on account or in settlement, and we should deprecate any steps which would tend to weaken or break these associations.

C. S. WILLIAMS, Managing Director,
Light Steelwork (1925), Ltd.
London, NW10.

"HONOUR YOUR FORBEARS"

To the Editor of *The Builder*

SIR,—I have read with great interest Mr. John Betjeman's address given recently at the RIBA (your last issue), but I cannot agree with him when, speaking of architects, he says: "Always remember you are artists!" Many architects are no more than clever plan solutionists. This does not mean that they are artists. On one occasion I asked an eminent architect what proportion of architects are artists. "Perhaps ten per cent." he said. Can the great blocks of flats Mr. Betjeman speaks of be the work of artists? I have an illustration before me of one such; its elevational treatment has the appearance of having been inspired by a market town poultry pen. Instead of geese, ducks, rabbits, ferrets and puppies you will see humans peering out. Will anyone in the future pause to look at these cold prison-like edifices? This dreariness might be relieved by a bit of washing hanging out; it would add a bit of colour to their drabness!

"What with your guerillas nagging me if I don't strike and my wife nagging me if I do, it's a dog's life!"

Many other modern buildings less essential than flats are equally characterless and dull, especially after London fog treatment. A good background for a little sculpture to relieve the egg-box character! The RA Schools, the RCA and other schools turn out sculptors and painters, but few architects make use of them; too costly, they say. Could not the marble hall character of some of the sanitary arrangements be cut down to a plain utility character? They are not lounges or smokerooms; it is not necessary to linger unnecessarily there. If this were done perhaps a poor sculptor might get a chance. I could walk up Bond-street and admire two shopfronts with sculptured figures, one, I believe, by the late William Flockhart, the other, I think by one of the Pites. What if it is just individual opinion? Present-day architectural design, like modern sculpture and painting, is all a matter of individual opinion.

W. J. WILLS.
2, South Leigh, Dorking.

THE OPERATIVES' WAGE CLAIM

To the Editor of *The Builder*

SIR,—We do not, of course, object to the statement of your views in your Editorial (January 7), but will you please give your authority for the extraordinary statement: "If (*i.e.*, the proposed increase) would add, on the operatives' own admission, about £86 million to the wage bill of the industry." "*On the operatives' own admission.*" Come, come! What we have done is to quote the building employers' figures and show that *their* calculation of £90 million should be

£86 million. We do not mind controversy, but let it be fair.

R. COPPOCK, General Secretary,
The National Federation of
Building Trades Operatives.

Federal House, Clapham, SW4.

*** The calculation referred to in our Editorial was taken from a broadsheet issued by Sir Richard Coppock's Federation. In the absence of any estimate by the Operatives themselves of what would be the annual cost of the proposed 9d. per hour increase, we regard as fair the inference that the figure of £86 millions—as corrected by the Operatives themselves—is about the mark. If we are in error, perhaps Sir Richard will say what, in his view, is the proper estimate.—ED.

OBITUARY

LEONARD E. HARPER, FRIBA

WE REGRET to announce the death at Birmingham, of MR. LEONARD EWEN HARPER, FRIBA, who was the architect of many important buildings in the Midlands. He was 67.

Born in Birmingham, he was educated at Lickey Hill School, Barnt Green, and then joined his father, the late Mr. Ewen Harper, who was in practice in Birmingham with his brother, the late Mr. Alfred Harper, as an architect. The three worked together. The partnership between the brothers was ended when Mr. Alfred Harper was joined by his son in forming one firm and Mr. L. E. Harper's son joined his father in a second firm. This family of architects produced the designs for well-known buildings in Birmingham and district. Mr. Ewen Harper, the originator of the practice, created the form that the Central Hall assumed and designed Ruskin Chambers, Corporation-street.

Mr. L. E. Harper, who had studied architecture in the evenings at the Birmingham School of Architecture, himself designed the Memorial Chapel at Wrekin College, and the Midland Counties Dairy, Wolverhampton, and when working with his father and uncle made the drawings for Norwich Union Chambers, which, when built, was the highest building in Birmingham. They also produced the drawings for Hams Hall Power Station.

C. H. WATSON, LRIBA, FRICS

MR. CHARLES HERBERT WATSON, LRIBA, FRICS, of Messrs. Burgess, Holden and Watson, of Beaconsfield, whose death occurred recently, received his training as an architect in the firm of Messrs. Burgess and Myers, of Beaconsfield. He reopened the practice in 1919 in partnership with the late Mr. Julian Burgess and the late Mr. W. F. C. Holden, and together they were three of the major pioneers in the development of modern Beaconsfield and carried out, with the predecessor firm, the greater part of the development of the new town and the planning of the garden estates for which Beaconsfield is noted.

More recently, Mr. Watson, in partnership with Mr. H. Desmond Hall, ARIBA, now senior partner of the firm, was concerned with the planning of the Beaconsfield council house estates, for which they were awarded one of the first post-war housing medals, presented by the Ministry of Health, for the housing scheme at Orchard-road, Beaconsfield.

SOCIETIES

RIBA

Notes from Council Minutes

FOLLOWING are notes from the minutes of the RIBA Council meeting held on January 5, 1954:

The Royal Gold Medal, 1954: The Council learned with very great pleasure that Her Majesty the Queen had approved the award of the Royal Gold Medal, 1954, to Mr. Arthur George Stephenson, CMG, (F) (Australia) and had graciously consented to bestow the Medal in person during her visit to Australia. The Secretary also reported that Mr. Stephenson had written expressing his deep appreciation of the honour bestowed upon him.

APPOINTMENTS

(A) *RIBA Representatives on the Architects' Registration Council for* 1954-1955: The Royal Institute is entitled to 25 representatives for the year beginning April, 1954, and the following were appointed:—A. R. F. Anderson (F), Harold Anderson (F), D. H. Beaty-Pownall (F), J. T. Castle (A), L. A. Chackett (F), Dr. F. F. C. Curtis (A), A. G. Sheppard Fidler (F), R. O. Foster (F), P. G. Freeman (F), P. K. Hanton (F), J. K. Hicks (F), Howard L. Kelly (F), Cecil Kennard (F), H. Martin Lidbetter (F), Howard V. Lobb (F), E. D. Lyons (A), S. W. Milburn (F), T. E. North (F), J. T. W. Peat (F), Denis Poulton (F), F. L. Preston (F), A. L. Roberts (F), W. A. Rutter (F), Ernest Seel (F) and R. H. Uren (F).

(B) *RIBA Representatives on the Admission Committee*: L. A. Chackett (F), C. J. Epril (F), H. Martin Lidbetter (F) and J. T. W. Peat (F).

(C) *MoH and LG Housing Medals, 1954: London Regional Awards Committee*: John Harrison (A) appointed as fourth architect member.

(D) *RIBA Architecture Bronze Medal: The South-Eastern Society of Architects: RIBA Representative on Jury to consider Award*: R. E. Enthoven (F).

(E) *National Housing and Town Planning Council: Technical Committee: RIBA Adviser*: F. B. Pooley (A) in place of Edward Armstrong (F).

(F) *Southern Regional Council for Further Education: Advisory Committee for Building*: R. W. Cave (A) in place of J. R. Tolson (F). (Note: This appointment is made by the Southern Regional Council in consultation with the RIBA.)

Direct Election to the Fellowship.—On the recommendation of the Institute of South African Architects and the Royal Institute of the Architects of Ireland, Mr. R. C. Abbott, Past-President, Transvaal Provincial Institute, and Mr. J. J. O'Gorman, FRIAI, President of the Architectural Association of Ireland, were elected to the Fellowship under the provisions of the Supplemental Charter of 1925, Section IV, Clause 4.

Intermediate Examination

THE RIBA INTERMEDIATE EXAMINATION was held in London, Plymouth, Manchester, Leeds, Newcastle, Edinburgh and Belfast from November 6-12, last. Of the 500 candidates examined, 173 passed and 327 were relegated.

CITY AND BOROUGH ARCHITECTS AND COUNTY ARCHITECTS

Joint Annual Dinner

THE JOINT ANNUAL DINNER of the County Architects' Society and the City and Borough Architects' Society took place recently at the Tallow Chandlers' Hall and, in accordance with the established tradition that the presidents of the two societies should occupy the chair in alternate years, on this occasion Mr. Leonard C. Howitt, FRIBA, MTPI, City Architect of Manchester, presided.

Distinguished guests present included Lord Kennet, president of the Association of Municipal Corporations, and Mr. G. H. Banwell, secretary; Mr. Chuter Ede, chairman of the County Councils Association, and Mr. W. L. Dacey, secretary; Mr. Howard Robertson, president of the RIBA, and Mr. C. D. Spragg, secretary. The Ministry of Housing and Local Government were represented by Mr. A. S. Charlton, assistant secretary; and among many personal guests were Mr. J. H. Forshaw, chief architect to the Ministry; Mr. S. Johnson Marshall and Mr. Nenk, respectively chief architect and chief administrative officer to the Ministry of Education; Mr. Bernard Fellowes, of the Ministry of Transport and Civil Aviation; and Mr. David Benton, assistant secretary, RIBA.

The occasion was notable for the excellence of the speeches, and many appreciative references were made to the magnitude and high quality of the work of local government architects, particularly in the spheres of municipal housing and educational buildings, whilst speakers from the two societies emphasised their acknowledgment of the heavy responsibilities as well as the wide opportunities associated with the practice of architecture in the public service.

BIRMINGHAM AND FIVE COUNTIES ARCHITECTS

Comments on New Buildings

COMMENTS on some buildings in Birmingham were made by MAJOR G. B. COX, FRIBA, speaking at a meeting of the Birmingham and Five Counties Architectural Association on January 8. Among them were Digbeth Police Station, which he described as a remarkable structure crowned by a still more remarkable cupola, and a certain building in the city recently opened with a great flourish of trumpets, which, he suggested, might well be called the "Shark's House." Looking at it he was reminded of a Frenchwoman's description of a festive occasion—"Beaucoup de biere, beaucoup de vin, beaucoup de zig-zag."

Major Cox was proposing a vote of thanks to MR. A. G. SHEPPARD FIDLER, FRIBA, the City Architect of Birmingham, who addressed the members on the changing scene in architecture from the earliest times to the present day. He dealt at length with the Renaissance period and showed many lantern slides of pictures and plans of famous Italian buildings. He laid down as aims for all members of his profession the furtherance of the cause of architecture and the creation of good buildings.

RICS

Examination Results

THE ROYAL INSTITUTION OF CHARTERED SURVEYORS have announced the results of the first and intermediate examinations (Land Surveying Section) of their professional examinations for autumn, 1953.

TEAM SPIRIT

A Review of Some Personnel Problems in the Building Industry

By **ROBERT W. PORTER, FCIS, ASAA, AIMTA, Director, Eastern Federation of Building Trades Employers**

FEW would deny that there has been a fundamental change in employer/worker relations in the last 20 years, yet there is evidence that the real significance of this fact is inadequately appreciated by some employers of labour to-day. Experience has clearly shown what full (or over-full) employment means in terms of work done by the average man. Many employers sense the need for a different approach to the employment of labour and some have taken cognisance of all the existing factors and sought to work out a policy of labour management which in present day conditions will achieve the best results. In the last analysis the success of any management policy must surely be gauged by the ability to get people to do things.

The first essential in tackling this problem is an appreciation of the effect of the social and economic changes of the last two decades, the advent of full employment, better education for all, shorter hours and more leisure, increased mechanisation with a greater amount of repetitive work and the greater strength of the Trade Union movement with its influence on self-government in industry.

Speaking on this subject on September 26, 1951, Sir George Schuster said that the ideal objective of self-government in industry lay in "making each industrial unit a harmonious live co-operative community spontaneously working together for a common purpose which is understood and accepted by all its members." If this can be condensed it is surely in the two words "team spirit."

The old reliance on fear of the sack for discipline and hard work has virtually no place in labour matters to-day and the problem which faces employers is a two-fold one, how to create those conditions in which a man will be happiest and give of his best, and how to ensure a commensurate financial reward for additional effort. The latter is really the thorny one of incentives which is not within the scope of this present article.

There are those managers of labour whose only confidence is in labour supply exceeding the demand, and they may even at present be marking time waiting for a return of those conditions. Even if this does happen and the unemployment figures go up, quite a few lean years of low productivity may have passed in the meantime. Surely, however, our objective should be a personnel policy which despite the terms of the labour market will fully recognise the individuality and the hopes and fears of the average working man.

It is absolutely essential at any time that the worker should realise he has an important part to play in any productive effort and that he is a human being rather than one of many labour units. The happy worker must surely be a better worker than one who is dissatisfied with his wages, conditions and treatment. Whatever the state of the labour market a highly developed team spirit must pay dividends. To take this further, on a non-commercial basis—and an employer should be a man first and an employer second—one-third of the working life of the average man is spent in earning his living. How much it would add to the store of human happiness if as far as possible one's work were congenial. Indeed how few to-day can say that this is really so. Is it expecting too much to hope that in framing labour management policy employers may increasingly give due weight to this point? On the other hand would the workers merely take advantage of this as a sign of weakness?

The new conditions in the post-war period were admirably summed up recently by one of the leaders of the building industry, who said that to-day we were not buying labour—we were selling employment. How, therefore, can we ensure that men play, and feel that they play, a real part in production? In any efficient concern there should be a sense throughout of a common purpose, each fulfilling his proper function and receiving a just reward.

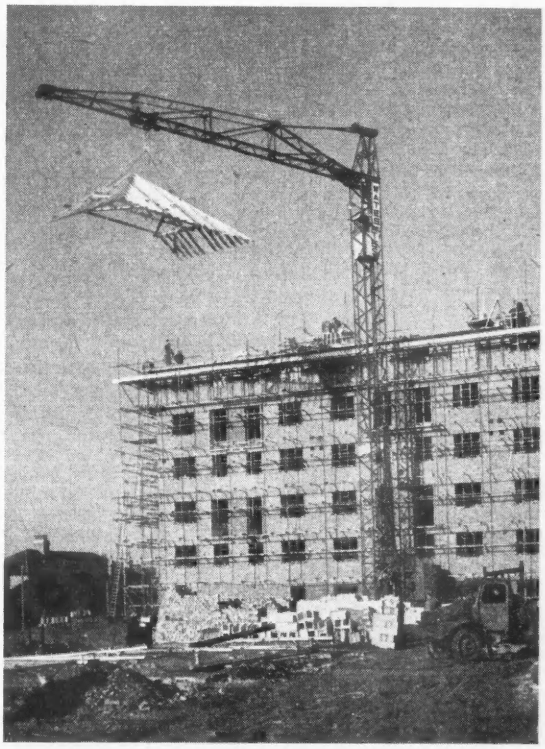
From the workers' point of view—and this is a problem to which all must contribute—there must be a vastly different approach to "what is the least that can be done for the wages paid." It is more than just satisfying "the boss"; it should extend to satisfying one's own moral requirements. Let us now examine the devices in personnel management to instil and further the team spirit.

Joint Consultation

Under a variety of titles joint consultation has been in existence for many years. It was not until the war, however, that it became accepted practice mainly under the title of joint production committees. It has not, so far at least, become a major factor in the building industry, and the Working Party found that joint production committees had not hitherto played any considerable part in the organisation of the industry. (Possible reasons for this are examined later.)

The Industrial Relations Handbook of the Ministry of Labour states that joint consultation "in its widest sense is an integral part of, and essential to, personnel management." The lead given by the Whitley Committee in 1917 was not generally followed up on a wide scale, and where joint consultation was used its scope was limited. In 1940 the Minister of Labour advocated arrangements for regular discussions between management and representatives of the workpeople, "to avoid conditions which cause discontent." With such a limited basis it is quite understandable that after the war some had very little further use for joint consultation. The National Joint Advisory Council, however, recommended in 1947 the setting up of consultative machinery in industry where it did not at present exist. In the past few years there has certainly been a steady growth of joint consultation in industry, but the extent to which it is at present practised and the success which attends it is very hard indeed to judge. Perhaps the best picture is given in "Joint Consultation in British Industry," the 1952 report of a survey undertaken by the National Institute of Industrial Psychology and sponsored by the Human Factors Panel of the Committee on Industrial Productivity. It is significant to note that of the 189 establishments investigated and visited not one is concerned with building. In our own industry there is practically no information readily available and certainly no pool of knowledge on which others can draw.

To-day joint consultation varies greatly in scope and application. It may be formal or informal. Its use may be auxiliary to management or it may supplant old methods.



PREFAB. ROOFS

The mobile tower crane shown left is lifting a prefabricated roof section into position on one of the four six-storey blocks (totalling 150 flats) being constructed at Laburnum-road, Mitcham, by Wates, Ltd., for Mitcham BC. The roofs are prefabricated on site in seven sections to each block of flats, and the contract also includes four blocks of two-storey old people's homes. Collcutt and Hamp, F/AA.RIBA, are architects for the scheme; John Laing and Associates are the consulting engineers; and R. Schofield, AMICE, is Borough Engineer. The quantity surveyors are E. C. Harris and Partners.

Two points, however, are clear. First, it will only work if all parties have confidence in it. An attempt to start joint consultation either to keep up appearances or to try and silence the grousers is doomed to failure at the outset. Second, joint consultation is basically two-way traffic. For the men it offers the opportunity of discussing various matters of concern with the management. It fosters a sense of "belonging," a feeling that the workers' part is appreciated and considered. For management it should afford a means of conveying essential information to the men, explaining any changes in labour policy, securing co-operation where joint action would be most effective and obtaining suggestions for improving output.

The contribution of joint consultation is both practical and psychological. The knowledge among the men of the existence of the machinery for joint consultation may on occasion prove more valuable to management than its practical uses.

So much for the theory! What about the practice? This article is not concerned with practical experience in industry generally which is excellently reviewed in the NIIP survey. Our concern is with joint consultation in the building industry on which our information is scanty. Inquiries of individual firms have only been possible on a limited basis because of the factors of time and resources, but a useful picture emerges on which it is hoped subsequent inquiry and contributions on experience from building firms will enlarge.

Factors Affecting Joint Consultation

Why has the building industry made so little use of joint consultation? The answers may appear self-evident to the industry itself if not to its critics. The following factors certainly have a bearing on current industrial practice:—

(a) *The size of the average firm.* With so many small units in the industry we find that over 75 per cent. of the men are employed in firms of less than 100 employees. The personal touch is, in fact, ever present particularly when the owner is in evidence several times a week. In firms of this size the function of management is often the function of the principal and not of a salaried employee with a remote owner in the form of unknown shareholders. On examining the practice in many firms it is clear that joint consultation in the widest sense is in continuous informal operation.

(b) *The nature of the work.* A large variety of jobs at one time results in a firm's personnel being widely scattered, often with changes in sites without first reporting to the main depot. Interesting experiments have been made in fostering a spirit of unity in these difficult circumstances.

(c) *Labour turnover.* In an industry with a labour turnover possibly four times higher than the average for industry generally, endeavours to create a team spirit by joint consultation must obviously have a limited success particularly where there is a high percentage of casual labour.

(d) *The nature of the industry.* Despite the highly competitive nature of the industry within its own ranks, the demand for building work is maintained at a high level by the Government irrespective of price (e.g., by a subsidy to keep rents in line with income and by a defence programme despite rising costs). There is no real internationally competitive market and the "export or die" struggle has no bearing on building labour policy. In export industries there are many instances of management turning to joint consultation as a major factor in bringing down costs and making goods saleable. In such circumstances management and men realised it just had to work.

(e) *The negotiating machinery.* Because of the extensive joint machinery in the industry covering wages, conditions, training, etc., the subjects for joint consultation may be more limited than in those industries which report success in this field.

(f) *Management opportunities.* Those employers who view joint consultation as an attempt by "worker/managers" to exercise the function of management without its natural consequences state with force and a good deal of truth that in the building industry a man who thinks he can run a business can always "have a go"; risking, of course, his own capital.

Experience of Joint Consultation

As has already been emphasised there is no general source of information on the industry's experience of joint consultation. The circulation of a questionnaire and interviews with representative firms even on a limited basis have been enough, however, to establish some sort of pattern.

Firstly, there appear to be few firms employing up to 300 men which regularly practice joint consultation. Those who have, report little success and rely on other methods which are reviewed later. It seems clear that joint consultation can only be fully effective in firms where the personnel exceeds 500 and on sites where upwards of 100 men are employed.

There are among our larger contractors some really successful experiments in joint consultation with useful results which confirm the faith of the firms concerned in this medium for fostering the team spirit. There appear to be more firms, however, who have tried joint consultation and abandoned it as worthless. The reasons given for this deserve close examination, viz.:—

(a) Workers generally are indifferent to the whole set-up. The minority who are actively engaged either as representatives or in putting up representatives are the grousers and those who prefer arguing to working. Workers' representatives are generally aggressive, ready to find fault and selected from the vociferous minority which is far to the left.

(b) The subjects raised are inevitably trivial, consisting of pettifogging complaints and minor irrelevancies. Discussion divides management from labour rather than bringing them together and the men use the opportunity to pay off old scores.

(c) Syndicalism is by no means dead among the workers' representatives and many fancy they know more than the boss on how the job should be run.

(d) In reporting back to the men the representatives are sometimes suspected of putting their own interpretation on the business discussed.

(e) Suggestions for improving production have been almost negligible and little of positive value has come from the men.

It may well be true that an employer gets the type of joint consultation he deserves. A tough uncompromising approach may cause the workers to put up equally tough representatives, turning meetings into battle grounds. It is significant to note that in other industries it may have taken up to two years to build up successful joint consultation.

The experience of some building firms and the value of joint consultation in other industries emphasises the need to give this medium every possible chance to succeed. A strong lead must obviously come from top management which must show, and in turn create, confidence in joint consultation and also set a high tone to the proceedings. Infinite patience is needed plus a sympathetic approach and prompt action following a promise to the men. The committee furthermore must be given a real job if it is to rise above canteen prices and mud on the sites. What success, for example, would attend the discussion of such items as timekeeping, regulation of tea breaks, safety precautions, elimination of waste of materials and careless use of plant, labour turnover and redundancy?

Only when this has been tried can it be said that joint consultation has been given a fair trial. Perhaps many who reject it have done so. Others may have found their efforts crowned with success. An exchange of views and experiences is greatly needed before the industry is able to assess the worth of joint consultation to building firms.

Alternatives to Joint Consultation

It has already been suggested that for building firms with less than 300 men joint consultation has no real value. How then is the team spirit being built up?

A brief survey of medium-sized firms in East Anglia shows a great awareness of the labour problems of to-day. Great store is set by the personal touch in visiting sites, and in medium-sized and small firms this is not difficult to maintain. In reply to a question on what percentage of the men really appreciated endeavours to make them feel part of a team the figures given ranged between 25 to 50. Generally the permanent tradesmen are the only group who really have any appreciation of team spirit. Two major obstacles are, of course, the low intellectual standard of many labourers and the fairly high proportion of casuals. The interest of the employer in his men must be sincere and not perfunctory. Operatives must be made to feel that the interest of the boss comes from a genuine concern for their own well being. A large variety of means of improving employer/worker relationships have been tried and a cross section of employers' views shows that the immediate and obvious benefit is generally appreciated most. Thus, the personal touch and good welfare arrangements on sites come first. The Eastern Federation has for several years operated a group accident and sickness insurance scheme and this is rated high by those firms using it. Men are selected for inclusion by the employer and this is a real incentive. (There are no records broken in a race where all the runners receive the prize!) A little lower on the list come works outings and sports and social clubs. Christmas boxes have apparently a marked effect provided the "share-out" is really worth having. Limited pension provisions are not felt to be specially valuable and house magazines or circulars have a low rating except in one firm which runs a particularly attractive monthly journal. This medium certainly links the various jobs where men might well be unaware of the size and scope of the firm, etc.

Two-way traffic is generally slight. Very few firms, despite opportunities given, ever get a useful suggestion from the men on how a job could be done faster or cheaper. At the same time quite a few firms do not endeavour to pass on information on future prospects, general progress or new contracts,

although security and continuity of work must obviously be a concern to many men.

The building industry has two potential advantages which should place it in a favourable position in labour matters. The average builder and his men are closely linked and craft work should of itself be rewarding. It is clear, however, that these do not count for as much as they used to in production matters and an approach to personnel management which is in keeping with present-day needs is called for.

The subject is one which requires detailed study since to our industry's special problems we cannot apply a general solution used elsewhere. If those with valuable experience in fostering the team spirit would come forward with reports and suggestions the industry would benefit greatly and if faith in human nature is not misplaced, production would rise.

CITY AND GUILDS

LMBA Promise Further Support

IN addition to the donation of £250 which the LMBA sent to the City and Guilds of London Institute last month in response to its appeal to industry to contribute to its funds, the president, Mr. Gerald Hill, has received promises from individual members of donations already totalling over £500.

Mr. Hill has now sent a personal letter to all his members whose names appear on the LMBA roll of apprentice masters, inviting them to contribute up to £25 each to City and Guilds funds, preferably by deed of covenant. In his letter the president says:—

"The City and Guilds of London Institute, of which HRH The Duke of Edinburgh is president, is doing very valuable work for British industry, and we as London master builders have good reason to be grateful to it. Its difficulty is that with the expansion of its work, and that work has increased enormously over the past 20 years, its funds have not increased proportionately. That is why it is appealing to industry.

"I feel that as master builders and apprentice masters we have an undoubted obligation to ensure the continuance of the Institute's craft examinations, and I trust that I may count on your generous co-operation. We could not do without the City and Guilds of London Institute, and a donation to it is a first-class investment."

The Institute's Work

From its foundation in 1878 the income of the Institute has come from the Corporation of London, the City companies and examination fees.

The Institute has been responsible for some three-quarters of a century for the conduct of craft examinations covering an ever-widening range of subjects. The number of students examined annually by the Institute now totals over 80,000, and students in building subjects now form the second largest single group, the number being 3,800 in 1939, and in 1953 over 14,000.

Apart from any question of future development, the Institute requires between £3,000 and £4,000 each year to maintain the existing examinations in building subjects, after taking into account the income derived from examination fees.

The Institute has recently appointed a consultative committee for building subjects to advise on developments which may be necessary to keep the examinations up to date, and to ensure that the needs of the industry are being catered for. The National Federation (Employers) is strongly represented on that committee.

HOUSING REPAIRS AND RENTS BILL

Amendments to English and Scottish Bills

IMPROVEMENTS in the financial assistance which it is proposed to give local authorities under the new housing legislation now before Parliament are indicated in two Government White Papers,* published on January 11. The main text of the White Papers is as follows:—

HOUSING REPAIRS AND RENTS BILL: FINANCIAL RESOLUTION

When the House of Commons resumes after the present recess it is proposed to table a Financial Resolution for the Housing Repairs and Rents Bill in a slightly different form from that in which it was put down on December 11 last.

The new form will be as follows:—

"That, for the purposes of any Act of the present session to make further provision for the clearance and redevelopment of areas of unfit housing accommodation, and for securing or promoting the reconditioning and maintenance of houses, it is expedient to authorise the payment out of moneys provided by Parliament of—

(*a*) Contributions in respect of houses purchased or held by local authorities for demolition but retained for temporary use for housing purposes, consisting of: (i) A contribution equal to one-half of the annual loan charges referable to the cost of purchase of each such house for each financial year in which any part of the house is used for housing purposes; (ii) a contribution equal to three pounds, or such other sum as the Minister of Housing and Local Government may determine, for each such house (or, in the case of a house containing more than one separate dwelling, equal to the said sum for each such dwelling) payable annually for a period of 15 years.

(*b*) Any increase attributable to the said Act in the sums payable out of such moneys under Section 173 of the Housing Act, 1936, paragraph 5 of the Schedule to the Furnished Houses (Rent Control) Act, 1946, Part II of the Housing Act, 1949, or Part I of the Local Government Act, 1948."

The differences are these:—

(1) In paragraph (*a*), the words "purchased or held by local authorities for demolition" are in replacement of the former words "purchased by local authorities for demolition";

(2) In paragraph (*a*) (ii), the words "for a period of fifteen years" replace the former words "for fifteen years from the date of the purchase."

These changes are being made in order to allow local authorities such as the Birmingham City Council, who have embarked under other powers on schemes under which houses are being dealt with in a similar manner to that provided for by the Bill, to have the financial and other benefits of the Bill in so far as the houses are brought within the clearance provisions of the Housing Acts. These changes will similarly permit grant to be paid, in respect of houses so dealt with, which local authorities have acquired or may acquire by gift.

HOUSING (REPAIRS AND RENTS) (SCOTLAND) BILL: MONEY RESOLUTION

During the debate on the Second Reading of the Housing (Repairs and Rents) (Scotland) Bill on December 9, 1953, it was stated that discussions with the Local Authority Associations in Scotland about the financial provisions of the Bill were still proceeding, and that the Secretary of State for Scotland did not at that stage propose to move the Money Resolution which had been tabled.

Further discussions with representatives of the Local Authority Associations have now taken place.

It is proposed to table immediately after the House of Commons resumes after the present Recess an amended Money Resolution in the following terms:—"That, for the purposes of any Act of the present Session to make further provision as respects Scotland for the clearance and redevelopment of areas of unfit housing accommodation, and for securing or promoting the reconditioning and maintenance of houses, and otherwise to amend the enactments relating to housing and rent control, it is expedient to authorise the payment out of moneys provided by Parliament of—

(*a*) Contributions in respect of houses purchased by local authorities under section seventeen of the Housing (Scotland) Act, 1950, or in respect of houses purchased or held by local authorities for demolition but retained for use for housing purposes, consisting of: (i) A contribution equal to one-half of the annual loan charges referable to the cost of purchase of each such house for each financial year in which any part of the house is used for housing purposes; and (ii) a contribution equal to seven pounds five shillings, or such other sum as the Secretary of State may determine, for each such house payable annually for a period of fifteen years;

(*b*) Any increase attributable to the said Act of the present Session in the sums payable out of such moneys under subsection (3) of section one of the Rent of Furnished Houses Control (Scotland) Act, 1943, section 116 or section 170 of the Housing (Scotland) Act, 1950, or Part II of the Local Government Act, 1948.

The proposed amended Resolution differs from the Resolution already tabled in respect that it provides in paragraph (*a*) (ii) for a contribution of £7 5s. instead of £6 10s. as the Exchequer contribution proposed to be payable annually for fifteen years towards expenditure incurred by local authorities in respect of houses purchased by them under the Bill.

Comments on Bill by National Housing and Town Planning Council

THE National Housing and Town Planning Council have submitted the following memorandum to the Ministry of Housing and Local Government setting out their attitude to the Housing Repairs and Rents Bill:

In 1947 the Council revived their campaign for the abolition of slums and socially undesirable housing conditions, since when they have unremittingly continued their efforts to obtain a definite and progressive national policy. In 1952 they devoted much time and money in propaganda and meetings, which continued through the pre-

* Housing Repairs and Rents Bill, Financial Resolution, Cmd. 9038, HMSO, price 2d. Housing (Repairs and Rents) (Scotland) Bill, Money Resolution, Cmd. 9032, HMSO, price 2d.

sent year culminating in the resolution which was passed at the National Conference at Eastbourne, of which the Minister has been informed. They are, therefore, most gratified that HM Government has presented the Housing Repairs and Rents Bill with the welcome proposals for sweeping away the slums and stemming the deterioration of other dwellings. Much as they would like to see drastic measures adopted for tackling these twin problems, they realise that years of neglect of properties in our cities, towns and villages cannot be made good in a short space of time. Even if financial resources were available, clearly the necessary labour and materials would not immediately be forthcoming for such a mammoth task. Therefore, the Council support the laudable purposes of this vital measure, appreciating at the same time that it has the nature of a new venture, and that time alone will reveal what defects there may be in such schemes as materialise, and what amendments may prove necessary to the legislation.

They are particularly pleased to see the proposal that every area must be surveyed for the purpose of ascertaining the number of houses unfit for habitation. This is in accordance with the view which the Council have held for some considerable time that a national survey is a necessary prelude to a housing programme of this kind. Had this survey been made some time ago—although it was inopportune for practical action—the work of slum clearance could surely have got away now to a good start, instead of which there may be the handicap of, perhaps, two years before sizeable schemes can be tackled.

Clause 1 (2) provides that the Minister may extend the period within which the information required from local authorities is to be submitted. In view of the vital nature of the work and the extreme urgency with which it should be tackled the Council desire to enter a caveat against any extension save in very special cases where the man-power resources for carrying out the survey may prove inadequate.

The Council is apprehensive about the sufficiency of labour and materials to implement an active policy for repairs and improvement; they appreciate that a much greater volume of work will, of necessity, be undertaken by small jobbing contractors not engaged in the building of houses, but nevertheless they hope that the Minister is assured that the new undertakings will not impinge on the new house-building programme of 300,000 a year.

In this latter connection the Council is of opinion that in those areas where a considerable amount of slum clearance work is necessary definite provision should be made for a precise allocation of new houses for rehousing.

Shortage of Inspectors

There is, it is true, a shortage of qualified sanitary inspectors, which cannot be remedied in a few years, but to the extent to which Health Department Staffs are inadequate, the deficiency can be made good by the temporary engagement of persons with recognised professional qualifications in building construction and maintenance.

The proposed increases in rent will not, on the face of it, impose much hardship on tenants, and the main question will be whether the provision for repairs is sufficient. If the property had, throughout the years, been kept in repair, a reasonable increase in rent might have been adequate for the purpose of keeping it in repair; but housing authorities are fully aware how much it costs to keep a house in repair these days, and with such a volume of repairs and maintenance work to be done it is felt to be doubtful whether owners who have hitherto been unable to maintain their property owing to the restricted rent income, will be able to bring the property up to the required standard for the same reason. It would be extremely unfortunate if owners were to raise loans in order to improve the standard of property only to find it impossible to maintain the standard which a tenant can perforce demand on the strength of a local authority certificate. The landlords of houses which have been kept in repair will immediately qualify for the increased rents, but this does not help the problem of raising standards at all.

The Council welcomes the proposed amendment of the provisions of the Housing Act, 1949, relating to the improvement of dwelling houses, and feel that this should encourage more reconditioning. It is hoped that when the amendment has been passed into law there will be nation-wide propaganda with a view to bringing to the notice of landlords and tenants the steps which may be taken for improving existing accomodation with advantage alike to both.

The Council is advised that in certain cases the initial cost of repairs is so great as to nullify the benefits of the improvement grant, they are, therefore, of opinion that wider discretion should be used in determining the margin between repairs and improvements.

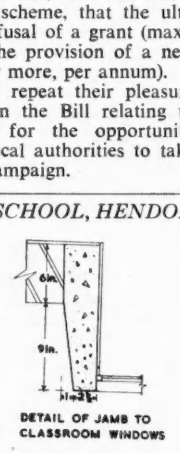
The Ministry might bring to the notice of authorities who do not, but who could apparently work the scheme, that the ultimate alternative to refusal of a grant (maximum £400) may be the provision of a new house (subsidy £35, or more, per annum).

Lastly, the Council repeat their pleasure with the provisions in the Bill relating to slum clearance and for the opportunity which is offered to local authorities to take up again this great campaign.

CLITTERHOUSE SCHOOL, HENDON

Details shown here are of window and eaves construction at the Clitterhouse School, illustrated on pp. 129-132.

Architect : C. G. Stillman, FRIBA.



TRANSFER OF ARCHITECTURAL WORK

Opposition by Birmingham Education Committee

BIRMINGHAM EDUCATION COMMITTEE, on January 4, approved a report (summarised in our last issue) of its finance and general purposes committee expressing strong opposition to a proposal of the general purposes committee of the City Council that it should agree to its architectural branch being incorporated within the new city architect's department.

Support for the general purposes committee's proposal came from Cclr. D. W. Lawson and Cclr. V. R. Turton, who moved and seconded an amendment that "having regard to the need for the full co-operation of the architectural work of the corporation under the control of the city architect, this committee offers no objection to the absorption of the architectural section of the education department by the city architect's department."

CCLR. TURTON said that of £2,225,000 worth of work being done by the education department, £1,225,000 worth was going to outside architects. The city architect's department would be enlarged to cover all the work now being done by the Education department, and it was hoped that there would be less need to give work to outside architects. "I believe," he added, "that the chief man over an architectural department should be an architect, and not a chief education officer."

He hoped that the new arrangement that was proposed would improve co-ordination, so that the city would no longer have housing estates without schools. The problem should be viewed from the standpoint of the city as a whole, not from the sectional point of view of the education committee.

Supporting the education committee's report, SIR WILFRED MARTINEAU said that in spite of what had been said, he was still opposed to the policy of absorption; and CCLR. S. E. DAWES suggested that it was not a bad thing for a certain amout of work to go to commissioned architects because in this way new and competitive ideas were obtained.

CCLR. F. T. D. HALL referred to the fine record of the education department's architectural branch, adding: "Yet you are being asked to change horses in the middle of the stream, not because the horses cannot do the work, but because certain people want a new system." No attempt had been made to suggest that the work of the present department was not satisfactory. Arguments against absorption were the volume of work being done: the specialised nature of that work and the value of the liaison that now existed with the teachers and the Ministry.

ALD. MRS. E. V. SMITH, chairman of the education committee, replying to the debate, agreed that there was need for co-ordination of all work in the city. That the schools should go up with houses was a point her committee had made time and time again. "Who on one committee of the City Council is going to decide whether to build houses or schools?" she asked.

During the debate it was also stated by MR. T. T. LOCKIE, teachers' representative, that Birmingham was proposing to change the system of having a separate architect's department for schools just when other authorities, impressed by the city's results, were about to adopt it.

LONDON BUILDING ACT APPEAL

Proposed Tall Buildings on Albert Embankment

THE Tribunal of Appeal (Mr. Philip Fores, Mr. Sydney Tatchell and Mr. Ernest Spiller), sitting at County Hall, Westminster, SE1, on January 7, heard an appeal by Messrs. John Pinches, Ltd., against consents granted by the LCC, under Section 51 of the London Building Act, 1930, to a construction company and the National Dock Labour Board for the proposed erection of two buildings respectively 106 ft. and 111 ft. in height, on sites on the Albert Embankment, facing the Tate Gallery.

Section 51 of the Act provides that no building of a height of more than 80 ft. shall be erected without the consent of the administering authority.

The appellants' premises are situated between the proposed buildings, and it was submitted on their behalf that the additional height of the new buildings over and above the statutory normal height of 80 ft. would cause them to suffer substantial loss of light and other amenities.

Mr. C. Hodson appeared for the appellants, and evidence on their behalf was given by MR. G. B. M. LANSDOWN, chartered surveyor, practising at St. James's-place, SW1. The witness said that for the past 50 years Messrs. Pinches had carried on their business of medallists, engravers and die sinkers from their present address. In December, 1949, they made an application for a single-storey addition to their premises, but permission was refused by the London County Council on the grounds that the Council desired to see an important façade arise on that part of the South Bank and that the appellants' proposals were not consistent with that desire.

The present proposals, said Mr. Lansdown, would cause interference with the amount of natural light to Messrs. Pinches' premises and would necessitate a chimney of more than 100 ft., which would make it extremely difficult for a ground-floor fire to draw. The total result of the proposals, if carried out, would be to reduce the value of the appellants' premises and would leave them "in a sort of ravine." They would be boxed in between two very large surfaces —rather like being at the bottom of a pit.

The height of one of the buildings would be 45 ft. above the eaves of Messrs. Pinches' premises, and the other building would be about 50 ft. above.

In cross-examination by Mr. Derek Walker-Smith, MP, who appeared on behalf of the respondent construction company and the National Dock Labour Board, Mr. Lansdown agreed that there would be no interference with the light on the front windows of the appellants' premises overlooking the Embankment.

MR. DEREK WALKER-SMITH: Is it not a fact that a large manufacturer's building on a site adjacent to Messrs. Pinches' premises was demolished about three years ago, and its tall chimney about two years ago?—Yes.

MR. DEREK WALKER-SMITH: Would it therefore not be right to take as a datum line the two or three years during which that building and its chimney have been removed?—That building was a long way back. The new outline will be very close.

You have plenty of light to-day, but comparing the buildings as they are to be with what the position was when the old building was up, do you say the appellants will suffer or not?—I can only repeat that the demolished building was about 50 ft. away.

If your daylight factor proves not to be worse than it was before, I suggest you will still have nothing about which to complain. How much worse do you say it will have to be before you think the new buildings should be disallowed?—There will have to be substantial interference.

Do you say that Messrs. Pinches' premises will be rendered unsuitable for normal work from a natural light point of view?—It will not be impossible to use the rooms, but they will be less suitable.

Mr. Lansdown added that the proposed buildings would cause wind turbulence on Messrs. Pinches' roof and would at the same time cause stagnation below where foundry fumes had to escape. The turbulence would probably move slates off the roof. He had known such a thing to happen in cases where a very tall building adjoined a low one.

On behalf of the respondents MR. PHILIP HUGH BENNETT, ARIBA, said the construction company purchased its site in 1951 and prepared their scheme in consultation with the LCC, the local planning authority. He admitted that the new buildings might affect, to some extent, the light of the ground-floor rooms of Messrs. Pinches' premises and also the first floor, but although they might cause some diminution of light, it would be essentially a diminution of side light. The appellants' ground-floor windows both faced a comparatively deep and narrow well, so that those rooms had not, in any case, good light even at the present time.

Questioned about the turbulence issue, Mr. Bennett said: "I hesitate to say damage would be impossible, but I cannot go further than that."

MR. EDWIN WILLIAMS, head of the building regulations division of the LCC, said that so far as turbulence was concerned, an equally good case could be made for a tall building sheltering a smaller one.

This completed the evidence, and the Tribunal's reserved decision will be announced in due course.

THE FUTURE OF ALMSHOUSES

A Housing Centre Discussion

THERE were three chief speakers at a Housing Centre meeting on November 17, the subject being "The Future of Almshouses." They were Mr. Donald Allen, Mr. B. R. G. Webber, and Mrs. Basil Henriques, all of whom have had recent experience in planning and designing schemes for the provision of this type of dwelling.

SIR ERNEST ROCK-CARLING, who presided, said there were two main problems involved in providing almshouses: the adaptation and modernisation of old buildings and the provision of new ones.

MR. DONALD ALLEN described what is being done by the City Parochial Foundation, a charity founded under the City of London Parochial Charities Act of 1883, which amalgamated all the charities of 107 parishes in the City of London. This year, he said, the income of the Foundation would approximate to £300,000 and he saw no reason why this income should not grow still more, with wise management.

The trustees had decided a few years ago that one of the most pressing problems which would face this country after the war was the housing of the aged poor. There were three phases in old age: (1) When people reached the pensionable age of 60 for women and 65 for men; (2) the stage when they got minor ailments and needed a little care and attention; and (3) when they became bedridden and just wanted to lie and rest quietly and fade away. The trustees had decided to provide for all these phases in one building, and instructed their architects to design a scheme for a bombed site in Islington. The trustees were told that the last thing the old people wanted to do was to move from their old associations.

It was essential that the old people should have self-contained flats. In the scheme which had been designed for the Foundation each old couple had their own self-contained flat, which contained special amenities, such as non-slip floors and background heating in every room. The building was built and first occupied in 1948.

If he were designing such a building again, said Mr. Allen, he would include a workroom, especially for the use of the men. A laundry had been provided, but the old people did not want it.

Power to Charge Rents

Mr. Allen said that almshouse trustees had the power to charge an economic rent. At the Hampstead homes for old people a rent of 12s. 6d. a week was being charged, all of which was paid by the National Assistance Board.

A scheme for almshouses which had been adopted by the Hammersmith United Charities was described by MR. B. R. G. WEBBER. The buildings which were being erected were of two storeys, he said, and provided separate units of accommodation and a common room. In the centre were flats with an adjoining kitchen, above these were the warden's flat and two rooms which were either used for guests who wished to stay overnight or as a first-stage sick bay.

Along the back of the premises 16 units were ranged, each having a separate living-room and separate bedroom. Along the flanks of the building were 24 units, all bed-sitting rooms. The Charities had found from experience that one or other of the married couples died and it was then necessary to find accommodation for the widower or widow and also for spinsters and bachelors. Therefore the emphasis was on the living-room plus the "bed-sitter."

As to cost of erecting these almshouses, that would depend on the conditions. One had to decide between spending more money on the construction and thus reducing the maintenance costs, or taking a risk by reducing the capital cost.

MRS. BASIL HENRIQUES described the almshouse provision made by the Jewish Board of Guardians in buildings which, she said, were totally unsuitable for the purposes, in Broadhurst Gardens, behind a big store in Kensington. At the time they acquired the premises they could not afford to put in a lift (the premises consisted of tall houses) and therefore for the time being they could not make the best use of the premises and could not send heart cases there. The outer houses were converted into one-room flatlets, each containing a kitchen unit which looked like a wardrobe and included a gas cooker, a little sink and a little larder.

Some of the back rooms were subdivided and there were 48 people living in the flatlets on either side. Each floor shared a bathroom and there was plenty of lavatory accommodation, and deep sinks for washing "smalls." The centre two houses formed a hostel for those old people who could no longer look after themselves.

BUILDING FOR AGRICULTURE

Papers and Discussion at the Architectural Association's Symposium

A SYMPOSIUM on "Building for Agriculture" was held at the Architectural Association in London on December 2 last, when an architect, an estate manager, farmers and representatives of the Ministry of Agriculture contributed papers on the many aspects of farm buildings. In all, eight papers were given, extracts from which begin below. Mr. Bryan Westwood, FRIBA, occupied the chair at the morning session, and Mr. Peter Shepheard, ARIBA, AMTPI, vice-president of the AA, in the afternoon. The Symposium was opened by Sir Hugh Casson, RDI, FRIBA, president of the Architectural Association. Limited numbers of copies of the full report of the Symposium (i.e., the papers and the discussions) are available from the AA at 34-36, Bedford-square, WC1, price 5s. to members and 10s. 6d. to non-members.

The President's Opening Remarks

SIR HUGH CASSON, RDI, FRIBA, President of the AA, in opening the Symposium, said: I hope that you are all interested in farming or in architecture, and therefore familiar with one side or the other of Bedford-square. To those not accustomed to this side I would say that we are delighted to see you.

This is not the first Symposium which we have held here and while they have all been extremely valuable methods of exchanging information, there have been few better subjects than "Building for Agriculture." Having read all the papers, I realise why it is that farmers are such sad, worried, lonely looking men. No one who has watched farmers going round a sale in the country, for instance, could say that they looked the cheerful, happy people that we hear about from the farmers on the BBC. It is not just because they are spending money, which is always a sad and lonely business, but because their problems are so difficult and complex, and so extraordinarily individual; every farm seems to present a completely different problem to its owner.

Nevertheless, two themes seem to run through these papers. One is sturdy common sense, and the other is economy, which has now become a principle of our age. Economy, or the achievement of the maximum by the minimum of means, may mean more machinery, or it may mean no more than substituting a cattle grid for a gate, but it does mean better planning, by which I mean thinking ahead.

I think that here the architect can help the farmer. Architects are apt to think that they can be of help to everybody, and at some times they are of more help than at others; but there is a great deal of ugliness about some farms, and ugliness is always evidence of disorder, and disorder means an expense which nobody can afford. These papers bring out the fact that nearly all the farms in this country are very small, and that they change ownership very frequently. With every change of ownership there is probably a change of policy and of methods of farming. Methods of farming therefore are bound to change much more rapidly than buildings. If, therefore, the architect has to work to the theme of economy, the second theme to which he should work is flexibility.

Background and Trends

THE first paper, "British Farm Buildings in 1953—Background and Trends," was given by MR. N. K. GREEN, BSc (Agric.) Lond, ARICS, QALAS, of the London headquarters of the Agricultural Lands Service of the Ministry of Agriculture and Fisheries. He said:

This paper is intended to deal, not with details of design and construction, but with the subject of farm building as a whole, and the lines along which it should be approached.

Farm buildings, if studied carefully as a whole, will be found to fall fairly easily into three main groups, namely: (i) Buildings for livestock, sub-divided into "cattle" and "pigs"; (ii) buildings for deadstock, sub-divided into "static" and "mobile" machinery; and (iii) buildings for handling and storing commodities such as grain, hay, straw, potatoes, feeding-stuffs, silage, fruit, fertilisers, seeds and so forth.

Taking stock of British farm buildings generally in 1953, and looking ahead to what they may be like in years to come, certain trends in design and construction are apparent. These modern trends are mentioned in connection with the various types of building as follows:

LIVESTOCK

The Cowhouse.—A separate manger for each cow is being favoured rather than continuous mangers. Manger design is, on the whole, becoming much more variable. On the other hand, a British Standard for cowhouse mangers has been prepared and is to be published.

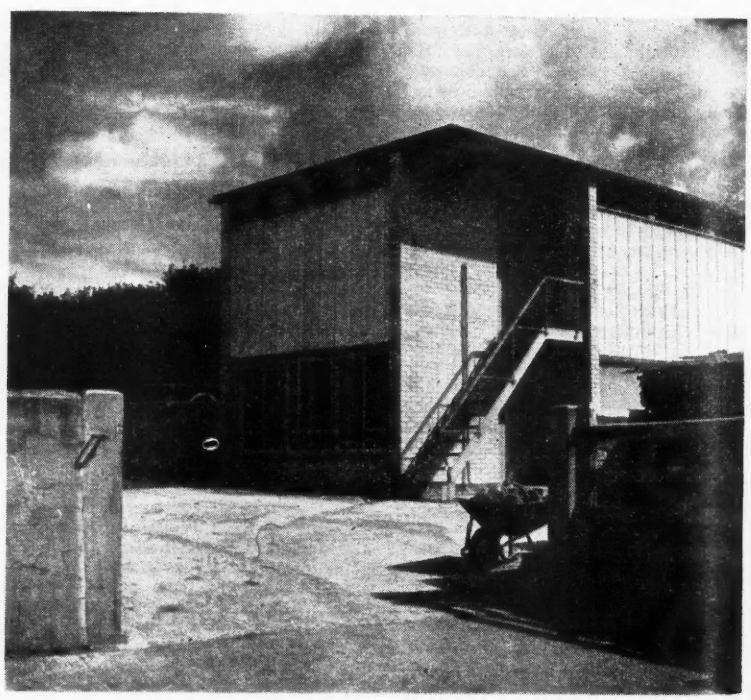
Where the improvement of existing cowhouses is concerned it is being found that in the main it is the floors that need attention. There is also a widespread desire to give cowhouse walls an internal finish that is impervious and readily cleanable without having to go to the length of cement rendering them.

There is a steady tightening up of the enforcement of the Milk and Dairies Regulations, 1949, and that means a higher standard of cowhouse design is being enforced.

Liquid Manure Conservation.—A survey of farms is being made all over the country by the Ministry of Agriculture to ascertain what farmers are doing about conserving liquid manure. As most of the liquid manure on a farm comes from the cowhouse it is appropriate to mention the matter here. It seems likely that the "weir" type double gully for separating urine from water may be more widely used.

The Dairy.—Milk is likely to be increasingly cooled in the churn either in an immersion cooler or by running water over the outside of the churn. This may affect the size of the cooling room. Milking of cows straight into the churn is becoming popular. This means that there may be less equipment in the dairy. The use of hypochlorites instead of steam for sterilising may spread. That would mean the elimination of steam-raising plant, sterilising chests, steaming stools, etc.

The use of churns might be eliminated altogether by the handling of milk in bulk in tanks, static and mobile. That would mean a large storage tank in the dairy which could be emptied into a tanker lorry backed



A combined granary and food preparation room. Stillman and Eastwick-Field, AA.RIBA, architects.

right up to it. A pilot scheme on this principle is to be tried out in Scotland.

The Milking Parlour.—Separate washing stalls are no longer universally advocated. The feeding of concentrates in the parlour seems likely to decrease.

The scheme of having the parlour floor at two levels, one for the cow and the other for the milker, to avoid stooping, is regarded as of increasing importance. But new parlours seem likely to be of the "abreast" rather than the "tandem" type. Buildings that used to be regarded as too narrow for conversion into milking parlours are now accepted for that purpose because there is the "direct exit" parlour with no exit passage for the cows.

Cattle Yards.—The movement towards keeping livestock in more comfortable or natural conditions is gaining ground. One aspect of this is the increasing number of dairy herds housed loose in yards. The disadvantages of this system if properly designed and organised are almost negligible, except where the herd is pedigree and very high yielding.

Bull Pens.—Here there are two opposite trends: one is towards better housing of bulls; the other is towards having no bull pen at all on the farm, relying instead on artificial insemination.

Loose Boxes.—These are used more and more for all kinds of animals because they are very adaptable, flexible and general-purpose.

Calf Rearing.—Accommodation for nurse cows and the multiple suckling of calves is receiving more attention.

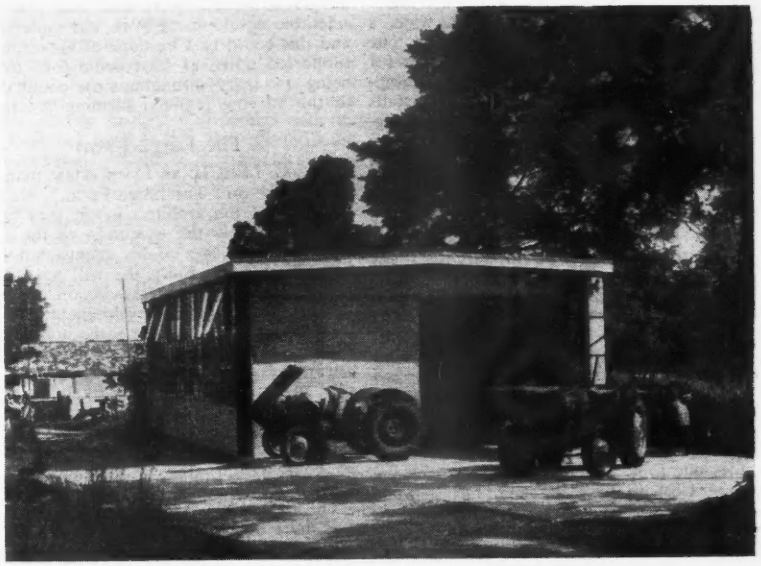
Pig Housing.—There is a definite trend towards providing more comfortable conditions for pigs instead of giving first thought to the saving of labour of keeping them. The Scandinavian type of building has been found not altogether satisfactory; and rather than try to improve it, designers are tending to start again from scratch. Insulation, ventilation, waterproofing and warming of pig buildings are receiving increasing attention. Two new materials, "Leca" and "Asbestolux," are proving good for piggeries.

DEADSTOCK

Implement and Machinery Housing.—One of the main demands of farmers is nowadays, and is likely to be, for more covered space for implements and machinery. More tractors, more combine harvesters, more balers need to be protected from the weather when not in use. A workshop for the repair and maintenance of machinery is becoming a necessity on many farms. Storage for petrol, oil and TVO in bulk is becoming increasingly important. It seems likely that a span of 22 ft. may be the most suitable for many buildings of this kind; that very low buildings to house low ranges of implements may be the answer on many farms, and that in the long run it will be wise to provide cover for all implements.

The Dutch Barn.—Modern trends in the design and use of this type of building are that it tends to be used more for the storage of baled hay and straw than for corn in the sheaf, and loose hay; that it is used as cover for modern grain and grass-drying installations; and that it may be used more for "barn hay-drying," i.e., in conjunction with a fan, heater and air ducting for making hay artificially. Asbestos-cement sheeting is replacing iron as the roof covering.

Prestressed concrete is beginning to be used for the framework at competitive prices. The effective area of cover provided may be increased by making barns with overhanging eaves or with lean-to extensions on either side. It is being said that the Dutch barn lends itself to more varying uses than any other type of farm building.



A modern farm workshop. Stillman and Eastwick-Field, AA.RIBA, architects.

Grain Storage.—The use of bags is likely to be abandoned in favour of bulk handling of wheat, though bags are fairly sure to be retained for malting barley. An increase in bulk handling of wheat will mean more tanker combines, self-emptying transport, grain-receiving pits, silos, bins, conveying machinery, grain dryers, grain cleaners, etc.

At present concrete and brickwork are the usual materials for grain silos; and nearly all silos are now under cover. But trials seem likely to show that steel, aluminium and plywood may be equally satisfactory; also that silos may be erected without any buildings to cover them.

Loading Facilities.—It seems likely that in the future loading ramps and platforms and floors at lorry height will become more common.

MATERIALS AND CONSTRUCTION

All will be familiar with the type of building known as the "MAF" building. There is little doubt that the standard dimensions of these buildings are popular and that this type of building has a useful future.

As regards the question of reducing the cost of maintenance of proposed farm buildings, it may be well to bear in mind that concrete window frames need no maintenance and that it may be possible to do without windows altogether, having instead roof lights only. "Perspex" for roof lights is likely to be more widely used.

Again considering maintenance, concrete, and probably prestressed concrete, in conjunction with asbestos cement for roof coverings, rain-water goods and so forth, is likely to be used increasingly.

Aluminium alloy used as a building material needs little or no maintenance and, though it tends to be expensive in first cost, is likely to be increasingly used for that reason.

In recent years home-grown timber has been used increasingly and will probably continue to be used to a large extent.

A well-known method of constructing walls which may become increasingly used is that of erecting self-centring metal reinforcement as the core of the wall and then plastering it both sides with concrete.

As a rule when brickwork is used for farm buildings it is assumed that a thickness of 9 in. is required to be on the safe side for most purposes; but many are now beginning to think that for many purposes a thickness of only 4½ in. may be satisfactory, provided it is suitably reinforced.

It is sometimes said that most of the buildings of the future will be composed of prefabricated units which will be easily assembled on the site by unskilled labour. That is a very debatable point because it is being found that there is a limit to the amount of prefabrication that can be done at the factory. The limiting factor to extending this practice of prefabrication to farm buildings is the fact that one rarely finds the requirements of different farms to be identical. In other words, almost every farm building has to be designed, to some extent, to suit the particular site on which it is erected. It follows that farm buildings are not nearly so easy to prefabricate as dwelling-houses, and it is probable that prefabrication of farm buildings will not develop very much further.

DISCUSSION

MR. MICHAEL BUNNEY, FRIBA, who spoke as a hill farmer and an architect, said that the scope of grant-aided improvement schemes was such that they were transforming farming in hill areas. There was a tendency for Government farming policy to change at short notice, which made life difficult for both farmer and architect and might lead to farm buildings being planned for dual purposes. A farmer for whom he had prepared plans and who wanted a byre for stock-rearing had been told that it must be to milk standards, although there was no possibility, because of its remoteness, of its being used for milk. It had been built in that way at considerable expense, half of which was borne by the public.

There was a trend towards combining a large number of farming operations under one roof. He knew one farmer who produced

high-grade Jersey milk and who had, under one roof, 135 ft. long and 40 ft. wide, a range of stalls for 30 cows, a space at one end for hay and silage and at the other for grain and feeding-stuffs, and dairy equipment and having a spine wall with cow stalls on one side, and calf pens, bull pens, piggeries and so on on the other side. It was his only building, and it saved labour and was cheaper in first cost.

The position of the architect was at the moment most unsatisfactory; he had to play second fiddle to the AEC and the farmer. The farmer often asked the architect for plans and nothing more, not wanting supervision, but if anything went wrong the architect was blamed. He suggested that, just as was done by the Ministry of Housing for ordinary housing, the Ministry of Agriculture should officially encourage the employment of architects on all grant-aided schemes for farm buildings, for a start.

MR. GREEN said that he had seen little evidence of a trend to have all the buildings under one roof. There was even a tendency in the USA to have the buildings separate but close to one another with covered passages between. The use of one big roof meant that either it must be very high, and therefore cold for livestock; or else of multiple span with undesirable valley gutters between the spans.

MR. D. S. SOUTAR, ARIBA, observed that in the past 15 years there had been tremendous progress in the agricultural industry. The main advances had taken place in the husbandry and equipment spheres which both offered the farmer a direct and immediate profit for improvements effected, but the farm buildings, although the very heart of the enterprise, had been sadly neglected. Most developments in farm buildings had been carried out by wealthy and progressive farmers to meet their own individual problems. Hardly any development work had been carried out by educational or research institutions. The farmer demanded a guaranteed answer to his problems and if progress was to be made such answers could only be given by architects and others if considerable development work was undertaken, and this could best be done at Government-supported units, at least some four or five being necessary throughout the country due to the varying regional farming practice.

The Large Farm

MR. C. LEECH, an Essex estate manager, spoke on "The Large Farm." He said: The rôle of the architect in the past was, I suppose, mainly the execution of the many and various wishes of his clients, but I believe that in the future he will need to be in a position to render advice on the many aspects of agricultural development.

Although two- or even three-storey buildings have for some purposes a number of advantages, a single storey with a span wide enough for each purpose is likely to be the most economical to build for some time yet. A wide span with lean-to on one or both sides will always be the most economical way of covering an area of ground, with the minimum number of intermediate stanchions.

On materials, he said, as it becomes more and more difficult to keep abreast with farm maintenance, every effort should be made to find materials requiring the minimum of maintenance. Reinforced concrete structures with asbestos cement roofs, although not very attractive, do meet these requirements. Open ridges or Perspex roof-lights are preferable to side windows.

Timber and iron should be avoided wherever possible. Asbestos-cement sheeting is so far the only satisfactory material for sheds housing driers, the corrosive effect being too great on other materials.

DISCUSSION

MR. R. O. BOND, FRIBA, said his experience in Norfolk had been that if a farmer employed an architect he left him to carry the job right through to completion. He had had experience in dealing with two farms between 1,000 and 2,000 acres. The grouping of buildings was entirely different on those farms from that on smaller ones, because his clients split up their activities, keeping their dairy herd in one place, their pigs in another and their equipment in another. That was partly dictated by labour considerations, their cottages being in different areas. He had never had a bare site to deal with, and in Norfolk he did not think that there would ever be one. Usually the position of the buildings was decided by the farmer or related to existing buildings. One knew the ideal for which one was striving and utilised the old buildings as much as possible in attaining it. Large farms did not change hands so frequently as small ones, and planning was easier. Moreover, if large farmers once went in for pigs they continued to do so; when the market for pigs was bad, it was the smaller men who dropped out. On the question of large or small buildings, the Dutch and Danish farmers who had settled in Norfolk favoured putting everything under one roof.

MR. C. LEECH, in reply, agreed that the bare site was almost Utopian, but his remarks applied where there was a reasonably large attempt to modify old buildings. In many cases it would pay to use a bulldozer on many old buildings and start afresh.

MR. G. J. M. JENKINS, ARIBA, asked whether Mr. Leech's ideal would be to move the farm away from the village and nearer to the centre of the holding, using transport to bring the workers from the village to the farm and back.

MR. LEECH said that on light land transport was comparatively easy and cheap, and there was much to be said for having the men and buildings nearer to the village. His point had been, however, that one might have cows, one would have some place for corn storage, grinding and mixing, and if one had arable land one would have some machinery, and there seemed no point in having all those things together.

A MEMBER asked whether Mr. Leech advocated the covering of yards, which he himself favoured, he said, having tried open yarding. A friend of his had put up an enormous structure like an aircraft hangar with four separate yards for his cows, and would use far less straw. The capital cost of covering a yard could be recovered where one had to pay £10 a ton for straw.

MR. LEECH said that if one had to buy straw, especially at that price, one should not have yards, covered or not. For young stock he did not think farmers could afford the capital to cover right over.

The Small Farm

AN Oxfordshire farmer, MR. FRANK HENDERSON, dealt with the particular problems of "The Small Farm." He said: It is not generally appreciated that in this country it is the small farm that produces most per acre and per person employed and that 80 per cent. of the farms are under 100 acres.

There can be little doubt that these units are capable of very much greater production provided that the farmer is given the necessary encouragement in the form of a reasonable profit on his outlay and labour, and that it is possible for him to have buildings suitable for his farming programme.

In most cases considerable alterations to existing buildings are required or complete rebuilding if maximum production is to be obtained with the minimum expenditure on labour; this is of vital importance with falling prices of farm products and increased costs of labour.

All too often slipshod alterations are made without very much thought and there is no

View of (left) a rebuilt granary with boxes under and (right) new suckling boxes built in Cotswold stone. Stillman and Eastwick-Field, AA.RIBA, architects.

real planning of the buildings as a whole. These alterations have the advantage that they will not last very long and something else will have to take their place quite soon. They do not require the service of an architect or if one is employed he simply tries to carry out the general idea put before him by his client, rather than take a broader view of the farm's real immediate and future requirements.

What have we to keep in mind in designing farm buildings? (1) In building permanent structures it must be remembered that the whole system of farming may change in the life of the buildings; (2) the expenditure on buildings can only be justified if it will increase the total production of stock and/or produce from the farm; and (3) the design must be such that it makes a direct saving of labour.

To overcome the difficulty of the ever-changing pattern of farming it is essential to have buildings which can be easily adapted to different uses. A large roofed area which can be sub-divided at will may appear to be the solution, but it is not quite as simple as that. Cattle require a high airy building and it does not matter if it is cold in winter provided it is not draughty; pigs, on the other hand, require a temperature almost the same as human beings all the year round if they are to make the very best use of the food consumed. All stock will benefit from direct sunlight, but pigs will get sunburnt if they overdo the sunbathing. Chickens must have direct sunlight and they need a moderate temperature and freedom from draughts. A dairy needs to be cool, but a tractor store or workshop reasonably warm. One can easily show that there are so many contrary needs of the various sections of the farm that it is not simply a matter of dividing up a large roofed area; apart from anything else there must be free movement for vehicles.

To my mind the only solution to the problem is to have some buildings with a fairly low ceiling which can be adapted for use as loose boxes, calf house, implement shed, rearing yards for young stock, root storage houses, pig pens or for many other purposes. I assume that there would be roof lighting, and also that the water supply and electric mains have been run under the building with points for tapping off, say, every 10 ft., the only alterations necessary being the dividing walls and fronts. Windows would have to be fitted in addition for some special purposes.

Another section of the buildings could have a medium ceiling height which would be suitable for storage of implements, grain or food, or as milking parlours.

The third section would be of the Dutch barn type of building for the storage of hay, straw, etc., corn in the sheaf, for covered yards for cattle, for silos for grain storage or for ensilage; they would be equally suitable for storage of implements.

It is an interesting point in farm building design at the present time that with the high cost of labour it is only necessary to save one man-hour per day to justify spending £1,000 on building because 335 hours at 3s. comes to £50, which is 5 per cent. interest on £1,000.

A typical example of what can be a great saving in labour and power is a ramp. It should be one of the first considerations in selecting a site to see what use can be made of the natural slopes to give ramps in the best places. A ramp outside a dairy can save all the lifting of churns, and one outside a food store will enable all loading and unloading to be done with a sack barrow.

The maximum reduction of human movement in the buildings is of great importance and this can be done by careful siting of such buildings as the food store and dairy. There are many excellent sets of farm buildings where the position of gates is not given any serious thought and often the service of one person could be dispensed with in, for instance, turning out the cows, if the gates had been put in the correct place.

DISCUSSION

MR. JOHN STILLMAN, ARIBA, said that the two principles of ever-changing needs and cheapness ran all through the Symposium and led to great difficulties.

There were three interpretations of flexibility: (i) flexibility of use, involving the provision of bigger spaces than were wanted at the time; (ii) flexibility in planning, which meant that within a frame structure the partitions could be put in a number of places, after which it might not be possible to move them; and (iii) flexibility as meaning adaptability, which might sometimes mean expensive buildings, panels with nuts and bolts and, in fact, demountable buildings.

For many agricultural buildings the idea of flexibility and adaptability worked, since a reinforced concrete frame with asbestos sheeting served admirably for implement shelters, Dutch barns, covered yards and the like. He wondered whether such buildings were suitable for cowhouses, dairies and more complicated buildings housing expensive stock or implements. A mechanic's workshop, for instance, needed good insulation and heating and a dairy needed hygienic conditions.

With regard to the relationship between the architect and the farmer, the architect did not work hand in glove with the builder as had been suggested and should not abandon the job after drawing up the plans. His first problem was to write his own programme. The farmer might not appreciate all the possibilities, and the architect could introduce him to research bodies and relevant literature and even commercial firms. Discussion was valuable, but required time and patience. Whether for "*in-situ*" or standardised buildings the architect was necessary; first, for technical control over such things as siting, foundations, drains, levels, the need for additional roof insulation, what sort of roof lights should be provided, and which way they should point. Also, where the farmer tended to put up a number of what might be sheds, there was some justification for aesthetic control. The architect probably said nothing about it, and got on with it in his own way, but he must have in mind what the whole scheme would look like.

THE CHAIRMAN referred to himself as an architect who had tried to get a tree planted ever since he started practice, and had only succeeded this year, when he had been forced to plant trees because his buildings were considered to be so ugly. He therefore sympathised with Mr. Stillman.

MRS. RUTH PLANT, ARIBA, pointed out that the buildings which architects were asked to put up would be adapted by unskilled labour in many cases. The architect might put a scheme forward and be told by the farmer "I shall do some of this part-time," and then hear no more about it, but on passing by notice that the building had been adapted by an unskilled man and changed, perhaps, from a poultry house to a calf-rearing house.

MR. HENDERSON expressed sympathy with the architect in such circumstances and suggested that if a change of occupancy took place and there was a change of policy the architect should be able to come along and say "I designed these buildings; are you thinking of any alterations?"

MR. DAVID SOUTAR called for a realistic approach to the problem of the relationship of the architect to the farmer. The farmer, he said, would always want to do a lot of his own building and work in the evenings. If he wanted to build a piggery, he might not be able to afford to bring in the local builder. There seemed to be no reason why architects should not be of great help to the man who was going to carry out his own work. The architect could be of great assistance to the farmer by producing long-term development plans for the layout of his buildings and by giving advice and sketch plans and details as the work progressed, even if the farmer was carrying out the work himself. There was too great a tendency among architects to feel that they must handle this work in the orthodox manner; they should meet the farmer half way.

MR. A. C. COTTON, ARIBA, said that the most famous Danish architects did nothing but farm work. The Danish architect began by making soil tests and management plans and then designed the complete farm, advised the farmer what equipment to buy and how to manage and farm his land, even going to the length of staying on the farm on its completion and personally working the new equipment; in fact, he gave a very full service. The Danes were a most generous and hospitable people, but at the same time hard headed. They were able to land very high-quality bacon in this country at £175 a ton, which was about £100 cheaper than it could be produced here. This was largely due to good farm buildings which, in turn, were due to the fact that the architect knew more about the management than the farmer.

Pig Housing

MR. R. J. CHARLTON, deputy president, National Farmers' Union, gave the paper on "Pig Housing." He said: Contrary to a popularly held belief, the pig is basically a clean animal. He does not prefer to live in dirt and squalor. Give him the opportunity for cleanliness and he will use it, and, indeed, under good, clean conditions, he will give of his best and show his gratitude to his owner by returning an improved conversion ratio of meal fed to weight gained.

If cleanliness is one of the important factors in pig feeding, the other most important factor is a house warm and without draughts. So pig houses for feeding pigs should be warm, dry and have the necessary facilities for dunging outside the sleeping chamber.

Before the war, one of the most popular pig houses was the Danish type of house. This house was usually a building subdivided into pens. Each pen allowed approximately 9 sq. ft. sleeping space per pig and would usually hold a dozen pigs, but in addition to the sleeping space, where was the dunging passage?

This type of house was frequently put up before the war, but was not always successful as one of the most important features, never neglected in Denmark, was often omitted in buildings in this country; that was the ceiling. If this building is erected without a ceiling, there is a large air-space in the roof where cold air was often blown down the ventilators. The results were draughts, uneven temperature and pneumonia. A ceiling should always be put in at 6 ft. 6 in. above the floor level of the pens, to conserve

heat, cut out draught and help ensure good health; it need not necessarily be an expensive fixture and many farmers made perfectly adequate ceilings with wire stretched across the house and covered with straw.

THE "McGUCKIAN" HOUSE

The late Mr. McGuckian, of Northern Ireland, was an expert on pig housing. He designed a house for feeding which has proved satisfactory, and in many cases farmers introduced their own ideas for amending the McGuckian house. The house I am about to describe (Fig. 1) is one which I put up myself three years ago, keeping to the main principles of Mr. McGuckian, but not following his plan in every detail.

The house relies in the main on dry feeding. The sleeping chamber is indoors and there is an outside run for dunging purposes.

The house is divided into a series of pens. The floor is laid on a rubble foundation, 3 in. of concrete and then a layer of roofing felt with an inch of concrete on top. The pens are divided by interior walls 3 ft. 6 in. high and there is a central passage 4 ft. wide; the feeding hoppers are down the side of the central passage wall for ease of feeding. One pig is allowed 7 sq. ft. sleeping room. Water is laid on to water bowls in the outside yard. The windows are also the ventilators and are 4 sq. ft. The outlet is in the roof. The ceiling is the wire and straw construction I described earlier, and is 7 ft. from the floor. The outside yard need not be of any specific dimension and is approximately the same size as the indoor pens which are 14 ft. by 10 ft. These sizes, however, were constructed merely to suit my particular site.

The principle behind this construction is that since the dry meal method of feeding pigs is used through a dry meal hopper, the number of pigs which can be kept in a pen is not limited by the feeding space. Since there is always food in the hopper the pig goes to lunch at his own convenience. More pigs can, therefore, be kept in a pen than could be done if the pigs were fed with wet mash.

The effect of keeping more pigs in the pen is to use the heat from the pigs' bodies to warm the pen. It is amazing how warm the house keeps when kept full of pigs and this means that the food consumed is used to put weight on the pig's body and none of it has to be used to replace energy lost through lack of heat.

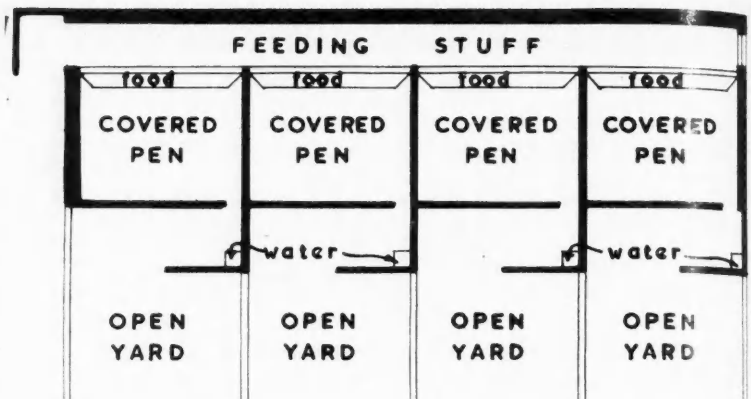


Fig. 2.—The Harper Adams Pig Parlour. Note the baffle walls opposite the exits from the covered pens.

Unlimited water is provided in the outside yard, and you will notice that the pig can get in and out of the yard as and when he desires, as the door swings to and fro either way after he has passed through it.

To prevent draughts striking the backs of recumbent pigs as other pigs pass in or out of the shed, there is a draught wall which overlaps the door. This type of house is used largely in Northern Ireland, although there are many variations on Mr. McGuckian's main principle, and it is a satisfactory form of pig housing.

THE HARPER ADAMS PIG PARLOUR

The advantages of this type of house (Fig. 2) are: (1) The house has good insulation to maintain warmth in winter and keep cool in summer; (2) there is an inside feeding passage for the saving of labour and to enable the pigs to take their food in greater comfort; (3) the lowest part of the roof of the building is that adjoining the yard; (4) the exits from the sleeping pens are protected from the wind by outside baffles; and (5) provision is made for the cleaning out of the pens by modern methods of mechanisation.

The unit is called the pig parlour as the outside pens act as sun parlours and also ensure well-made manure.

The type of pig housing developed at Harper Adams has much in common with the McGuckian house. It probably has, however, more flexibility in so far as it can be erected either as a lean-to or in a number of units.

It is recommended that the outside run faces south or south-east. The house is built with insulation to preserve the heat generated by the pigs. For this purpose the house is kept low—6 ft. at the highest point—with the inside feeding passage sunk 12in., giving headroom of 7 ft.

If the house is built as a lean-to, the main wall will, of course, be that of an existing building. If it is built as a separate house, then the main outside wall should be a cavity one of brickwork or hollow concrete slabs for the purpose of insulation. The other walls can be 4½ in. brickwork or 4½ in. hollow concrete slabs.

At the moment experiments are being conducted by keeping the inside pens in darkness or semi-darkness with the elimination of all natural lighting, the idea being to cheapen the construction, prevent loss of heat in winter, promote coolness in the pens in summer and encourage the pig to rest and sleep. However, if desired, there can be roof lights or alternatively, artificial lighting can be put in.

DEEP STRAW FATTENING HOUSE

Narrow deep straw fattening house originated by Mr. Reid.—There is another type of house, used for fattening pigs—the narrow, deep straw fattening house. In some ways it is similar to the Scandinavian type in that it has a span of about 33 ft. with a central feeding passage. Beyond that there are important differences in the design of the pens.

The pigs are kept in compartments extending from the central passage to the outer wall of the building, and the pens are separated by transverse partitions which are moveable, either hinged like doors or made to lift out. The feeding troughs adjoin the central passage and the floor nearest the trough is level and higher than the floor on the rest of the pen. The floor slopes away to the outside wall. The raised level floor near the feeding troughs is kept clear of straw, but the sloping part is littered regularly to secure an average

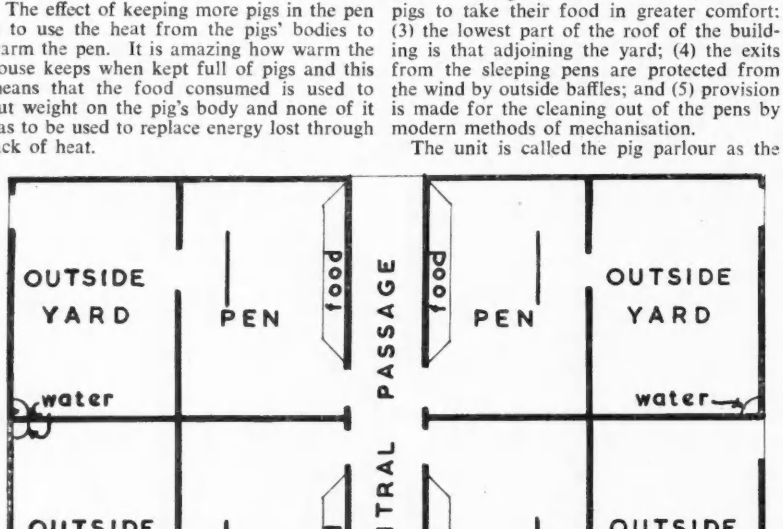


Fig. 1.—The "McGuckian" type of pig house, as modified by Mr. Charlton. Note the draught walls in the pens opposite the doors to the outside yards.

depth of a foot of clean straw. The idea of this type of housing is "to make muck," but the pens are cleaned out every four or five weeks, and it is claimed that this type of building saves labour as the pens are not cleaned out daily. No drainage is required as the liquid manure is absorbed by the straw.

There are a number of disadvantages, one of which is that when the straw becomes well trodden it is impossible to clean the pens out while the pigs are in them, and secondly, the varying depth of straw made into manure would change the temperature of the house materially in winter-time when the pens are cleaned out.

Wide, deep straw fattening house, originated by Mr. Black.—The wide, deep straw fattening house has a span of 45 ft., a wide central drive-through passage and a series of narrow feeding passages, leading off and at right-angles to the central drive through. Each feeding passage serves two groups of pigs, one on either side, and each group of pigs has a large pen comprising a straw and a non-straw area, and a dunging area. The non-straw area is hard standing adjoining the line of troughs at which the pigs stand to feed. The strawed area has a floor 6 in. lower in level, so that the bed of straw is contained without encroaching on the level part. The dunging area is screened off from the straw area by a short wall parallel with the central drive through—i.e., at right-angles to the branch feeding passage and has a floor that slopes down like that of the straw area but more steeply. This makes the bottom of the dunging area low enough to build up for four or five weeks.

The arrangement of the feeding passages enables the troughs adjoining them to be long enough to allow the maximum feeding space for the maximum number of pigs kept in the pens. Feeding can be done by a trailer drawn up in the central passage, and cuts to a minimum the amount of manual labour.

Again, no drainage sysem is necessary as the straw soaks up the urine.

Special pens are needed for farrowing sows. On most farms these are in a building separate from the feeding house, although there is no reason why this should be the case.

The principles behind the building of the farrowing pens are the same as the principles behind the building of the feeding house. The pig should be free from draught, warm, and farrowing rails should be placed round the walls of the pens.

There are three main types of heating: the bright infra-ray lamp, the dark infra-ray lamp and the heated floor. The lamps are placed over the creep and once the piglets have discovered how warm and cosy it is in there they will lie there and not near the sow. The bright infra-ray lamp will generally attract the pigs away from the sow even at birth, but in the case of the dark infra-ray lamp, I have generally found it necessary to place the piglets under the lamp in the first instance. The heated floor system is a section of the farrowing pen floor heated by electrical units placed in the floor. The portion extends into the creep and, again, the piglets, once they have discovered how warm it is, will lie in the creep.

Other buildings connected with the pig farm depend upon the type of production followed on that farm. However, on all farms there is need for a cool, dry store for feedingstuffs, and this should be placed adjacent to the feeding house with ready access both for the bringing in of the feed, for store and the taking out of feed to the pigs.

SUMMARY

In conclusion, the main principles of good pig housing are:

(1) Dry bed to lie in and no draught.

(2) Avoid a damp atmosphere and undue humidity.

(3) Adequate ventilation, aiming at an air exchange rate of 800 cubic feet per pig per hour; ventilation to be restricted as far as compatible with the removal of surplus moisture and the avoidance of condensation.

(4) Temperature:

(a) The temperature in a piggery should never fall below 50 deg. F.

(b) For pigs in the fattening house 60 deg. to 65 deg. F. is a reasonable temperature to aim at.

(c) For very young pigs, say, up to three to four weeks old, the temperature should be from 70 deg. to 75 deg. F., and even a temperature of 80 deg. F. would not be excessive.

(d) It is important to maintain a constant temperature throughout the day.

DISCUSSION

MR. DAVID S. SOUTAR said that the Danish type of house had been adopted in this country in plan and section only, and had resulted in some of the greatest losses that the pig industry had ever had to suffer. When built to the full Danish specification with insulated floor, walls and roof it was an excellent house. They had built some in the north in which they had screened off the dunging passages further to ensure dryness and warmth. The Charlton-McGuckian house was more Charlton than McGuckian, because Mr. McGuckian had insisted on his pens facing south and on more isolation between the pens. The Reid and Black piggeries were the forerunners of those houses designed to save labour by building up the dung to allow for periodic cleaning out. Neither was a complete answer, though the Black piggery gave satisfactory service. The Harper Adams Pig Parlour, which provided a similar environment to the McGuckian house and a labour-saving method of periodic dung removal from the outside yard was having popular success. In the north they considered that the outside yard should be covered; the dung could become a frightful morass, and the dampness could be carried into the house and lead to undue humidity.

Mr. Soutar agreed with Mr. Charlton on the fundamentals of pig housing which could be summed up as:

(a) *Factors affecting the pig.*—Dry bed, achieved by design and insulation, and giving the pig a separate place to dung, warmth by insulation and keeping all dampness away, etc. Fresh air achieved by numerous baffled inlets and controlled ridge or shaft ventilation, or in difficult cases an exhaust fan.

(b) *Factors affecting economy* in labour and management and capital outlay, involved the size and type of enterprise, siting and layout of complete unit, and individual design of pens for ease of feeding and the management factors which Mr. Charlton had mentioned.

The architect in general practice could not be expected to know all the details of designing a pig house, and an architect who received such a commission would be well advised to contact the local adviser of the Agricultural Land Service to act as interpreter of the farmer's ideas. The farmer must decide on the husbandry principles, which varied greatly throughout the country.

MR. G. M. KINGSFORD, FRIBA, asked what the cost per head would be for a Danish house.

MR. CHARLTON said he could not give the figures for the Danish house, but a Charlton-McGuckian house built in 1949 to hold 300 pigs cost about £1,200 complete, using brick walls up to 3 ft. and sheeting for the remainder and for the roof.

MR. A. C. COTTON gave the cost of the Danish house, fully insulated, as about £10 per pig.

MR. H. HOLLINRAKE said that the Ministry of Agriculture figures, based on contractors' prices, were: Harper Adams type, £10 per pig; David Black deep litter type, £12-£13, and slightly more for the Reid type; typical Scandinavian piggery, £13-£14, and for a small unit £15, per pig. That usually included one bay left for a food room, and the prices would be based on 150-200 pigs; with a smaller number they would rise slightly, and for a larger would fall a little.

MR. CHARLTON said the price of £1,200 in 1949 for 300 pigs he had quoted was what it had cost him, only part of the work being done by contractors.

Buildings for Cattle

MR. EDWARD OWENS, who, in partnership with his brother, has three typical Somerset dairy farms of some 450 acres, spoke on "Cattle in Relation to Some of Their Requirements in Farm Buildings."

He said: The bovine, like most domesticated animals, can accommodate itself to considerable changes of environment and treatment.

Variations in climate and in the economic circumstances of different farms have led farmers to exploit this factor in many different ways, giving rise to innumerable systems of cattle management, and types of buildings in which they are housed.

Further, rapid changes in farming methods under the programme for increased production, together with the prevailing high costs of building, have laid an emphasis on economy in labour and materials in building design and layout, at the expense of the health and comfort of the occupants.

Most cattle are of a docile and placid nature and it is desirable, and quite possible, to develop this as much by treatment as by breeding. A primary requirement of layout of farm buildings is that they will both manipulate and accommodate cattle with as little disturbance as possible to them.

Unfortunately, the cow has no consciousness of personal hygiene and will excrete just where she happens to be. Much careful thought has been given to the design and measurements of cowstalls to rectify this deficiency in the mentality of the cow.

The general principle of stall design is to have a raised bed of fairly smooth concrete (rubber mats have even been used) on which the cow stands when feeding. The length will vary with the size of cow, 60 in. is probably the maximum, and the drop to the gutter will be enough to make it uncomfortable for the cow to stand with her feet down in it, at least 6 in.

When the cow lies down the shortness of bed will keep her well forward, so that it is necessary to keep the front of the crib low enough that she does not knock herself and can sit with her head forward over the crib.

A common fault in cowstall design is the siting of the drinking bowl. When a cow

is masticating she holds her head forward and if the bowl is in front of her it catches droppings from the cow's mouth and soon fouls. Also, if the bowl is placed high up the cow's jaw approaches it at too horizontal a pitch and if drinking is too difficult she will learn to lick at the water and spill it. In a double stall the best place seems to be low down, between the pair of cows and, if yokes are not used, over the bed and not over the crib.

An adult cow can deal with about 35 lb. of dry matter a day, which may vary from 25 lb. of concentrates and 8 lb. of hay to perhaps 100 lb. of roots and 10 lb. of straw. The work of handling this large amount of feeding material is a matter of labour and economics. Food makes up about 50 per cent. of the total cost of milk production and therefore it is important that stalls are designed, lighted and equipped to facilitate careful and accurate feeding by the stockman and avoidance of waste by the cow. Cowsheds with a feeding passage have a distinct advantage here, though there must be sufficient height to the front of the crib to prevent the cow spilling food over the front.

Most cattle can acclimatise themselves to the rigours of climate, but a warmer temperature may give economies in the food consumed directly for heat production.

While some experimental work has been done on the effect of temperature on the milk yield, the means of raising temperature has been by restricting ventilation rather than by using warmer, or warmed, buildings. Scientific opinion seems to be that 50 to 55 degrees F. is about right. Many of us prefer 60 to 70 degrees and find that milk drops as temperatures go down. The problem is perhaps more one of keeping a level temperature by adjustable ventilators.

The tomato grower knows this and constructs his glasshouses accordingly and often makes a fetish of adjusting ventilation as between day and night.

Our outdoor winter temperatures vary so much between a NE gale of dry air to a mild SW spell of warm moist air that without very adequate ventilators easily and regularly adjusted we are not going to get uniformity of temperature. There is a problem which arises in many modern cowsheds built with materials such as asbestos sheeting. Whereas the old single line, low-roofed cowshed with slits at the roof apex worked fairly well and let out some of the warm fouled air while still warm, the double line shed of perhaps 34 ft. span has such a high apex that too much cooling takes place before the foul air gets away. The Danish pig farmer seems to have met this problem and now often has a low ceiling over his pigs and a very large chimney in the middle of the house to get foul air out quickly once it is on its way upwards.

Many of us are getting too much condensation in our modern cowsheds with all their air inlet and apex outlets, while the old narrow sheds are satisfactory in this respect.

Another problem of ventilation arises with young stock. Many yards of the half-open type are in existence and the point arises as to whether or not young cattle should be kept cool and hardy or whether they would benefit from more closed housing.

DISCUSSION

MR. N. G. E. TURNER said that the point made by Mr. Owens about keeping the cows peaceful and contented was often overlooked and could do with a great deal of emphasis. It also applied to store cattle if the best results were to be obtained. Settling these problems on a dual-purpose farm provided the architect with a dual problem.

It would be interesting if Mr. Owens would say something on the planning for and housing of the bull in relation to its activities, comfort and temper, a problem which required thought on such points as the service pen, exercise yard, letting the bull see what was going on, escape hatches and arrangements for cleaning. In adaptations he had found that the circulation of the bull required considerable thought.

On the question of letting the cow get used to slippery floors, he had heard it said that this could develop an anxiety neurosis and resulted in a depressed yield. There were simple ways of obtaining smooth but non-slip floor finishes.

The question of the temperatures of buildings seemed to be related to a good system of natural ventilation and insulation. If that was provided, would it be possible to maintain the temperatures for which Mr. Owens asked by the natural bodily heat of the cow?

Referring to Mr. Owens' remarks about the disadvantages of buildings with a high ridge, he mentioned that he had considered for some time that it should be possible to develop a prefabricated form of folded slab roof construction either as a north light or monitor which would provide long and uninterrupted spans and a much lower eaves-to-ridge height in relation to span.

He felt that structural engineers could profitably devote some study to developing this suggestion.

MR. OWENS said that they had only three bull pens. The present design of bull pens did not leave a great deal to be desired; it was effective, safe and simple. When farm buildings were simple they worked, but when intricate they simply cost. He agreed that the bull should be able to see what was going on. Some cows were nervous about slipping on smooth floors, but he preferred smooth floors, at the risk of their being slippery, to rough floors, since cows quickly learned to take care.

WARMTH AND VENTILATION

They had a temperature of about 60 deg. F. from the cows in the shed. He did not know what the effect of a lower oxygen content might be. Some work had been done on the subject in Scotland more than 30 years ago, but the conclusions did not seem useful because that experiment mixed temperature and restricted ventilation and tried to draw conclusions on both together. With good ventilation and warm air the result should be better than with warm air from restricted ventilation, which was what in fact he was using, but he found his results satisfactory. It was not a matter of maintaining a high temperature, however, but of regulating the temperature to keep it even. In Somerset there could be great variations of temperature during the year, and that upset the cows when they were tied up, and this was aggravated if there was a draught, and he had yet to see draught-proof accommodation for cows. There was a need for more research on ventilation and on how to level temperature for cows easily when they were tied.

MR. C. LEECH admitted the drop in yield in cattle yards to which Mr. Owens had referred, but suggested that there was a tendency to draw conclusions too soon; a man's pocket sometimes pulled him up before he had found the right answer. Identical twins which had been put under both systems had shown no difference whatever so far. They had found heifers responded better to the yard system than did the older cows.

MR. OWENS, dealing with a suggestion that the yoke was labour-saving and kept the cows cleaner, agreed that this was so, but said that he had experienced so much trouble with cows having difficulty in lying down and getting up, particularly if heavy in calf, that in the 40 stalls which they had just put up they were going back to chains.

Buildings for the Arable Farm

MR. H. HOLLINRAKE, ARSI, MIBAE, Provincial Advisory Officer for Farm Buildings, Eastern Province, gave a paper on "Buildings for the Arable Farm." He said:

From the beginning of the industrial era in Britain our rural areas have provided, and continue to provide, the pool of labour from which industry steadily draws, and in consequence as manpower dwindles on our farms, mechanisation grows. The arable farm has altered more markedly in this respect than stock and dairy farms. Tillage, being concerned with physical things, has lent itself readily to mechanisation, whereas the labour concerned with the more intransigent management of animals has naturally defied mechanisation to the same extent. The requirements of buildings for the arable farm have therefore altered rapidly and the acceleration caused by war has quickly moved us from stables to tractor sheds, and from fodder stores to oil stores. The horseman and teamster are gone and the tractor driver and mechanic reign in their stead. Design of farm structures, however, like farming in general, is not yet a mechanical process, a mere repetition of building technique, structural design or architectural formula. We certainly plan to use standardised buildings and make the most of new advances in technique and materials; the expediency of capital requirement forces that issue. But if science is defined as "any branch or department of specialised knowledge considered as a distinct field of investigation or object of study," then clearly farm structures come within the orbit of science. It is one thing to be able to build or to plan, it is a distinctly different thing to make those buildings and planning fit the complicated conditions and requirements of an industry such as farming.

The decision to build is essentially a matter for the farmer to decide, but that does not absolve the architect from appreciating fully such consideration as the farmer will give to the effect of the proposals on the profit his enterprise will make. Difficulties will often arise between landlord and tenant over the provision of fixed equipment. The architect can give considerable assistance in this respect by advising on a long-term plan, and avoiding temporary expedients and expensive work on buildings that should be demolished. Such a plan enables capital to be spent over a period of years and arrangements to be made which are acceptable to both landlord and tenant.

TYPES OF BUILDINGS

The buildings required for the arable farm can be broadly classified as follows:—

Implements.—General store. Workshop. Tool and material store—fuel store and tanks.

Grain.—Store for bulk or sacks. Drying, cleaning, bagging and loading facilities.

Stock.—Variable—but some stock are usually kept.

Storage.—Feed, fertiliser, seeds. Grinding and mixing machinery for stock feed.

On the important question to be considered of the relationship of these buildings one to another, as well as to farming practice, Mr. Hollinrake said:

The implements serve the fields, therefore their storage should be sited on the field side of the building group. This avoids the carrying of dirt and mud into the centre of the buildings. Most of the grain will be sold off the farm and therefore must be stored in such a position that road transport can readily collect it. Storage for seeds and fertilisers should occupy a similar position, the transport working in a reverse direction. Stock buildings do not quite come within this through-traffic group, although there will be movement of stock and stock products to and from the farm. The animals are the converters of raw materials, much of which is grown on the farm, into beef, milk, pork, bacon or eggs. There is therefore movement of crops to a position for storage and processing which gives a minimum distance of carry when fed to the stock. Within these groups there are sub-divisions—workshops, tool and fuel stores serving the implements, facilities for drying and cleaning grain, housing required for young stock, and calving or farrowing accommodation.

Although the particular type of production on the farm will vary considerably, and basically, all farm requirements can be grouped under similar headings to those described. With them as a basis the kind and volume of traffic around the farm can be studied closely and positions and groupings of buildings planned correctly.

The first job in planning or redesigning a farmstead will therefore be the setting up of a block plan on to which will be traced the line of operations to and from each building. This will quickly show where rearrangements must be made to avoid cross traffic and unnecessarily long carries. This is a fundamental principle applicable to renewal and adaptation work as well as to new work. An astounding amount of information can be learnt from such a simple procedure which can bring to light information on ways and means of reducing labour and simplifying work that years of working within the farmstead has failed to reveal.

GRAIN STORAGE

On grain storage Mr. Hollinrake said: Only a few combine harvesters were in use in 1939; we are now using over 22,000. This means that during the short harvesting period a tremendous tonnage of loose grain comes on to the market, whereas formerly it was stored in stack and released slowly. Storage for loose grain has lagged far behind the increase in the number of combines being used and in consequence the ability to house this loose grain has become a national problem. It is considered that it is primarily up to the farmer to be able to store most of his combined crop.

The basic systems of grain storage layout as developed in this country are shown in the diagrammatic sketches 1 to 4 (Fig. 3). Grain storage plants, however, like most other farm buildings, cannot be of completely standardised design, as each must suit the particular requirements of the farm. In particular the "farming" factors which would affect design are: (1) Acreage being cut by combine; (2) total length of cutter bar in use; and (3) whether the plant is to be housed in old or new buildings.

The speaker then explained how to calculate the rate at which the grain will arrive at the store, or "intake" rate, during harvesting. He continued: This is a most important factor for it sets our rate of handling on the plant.

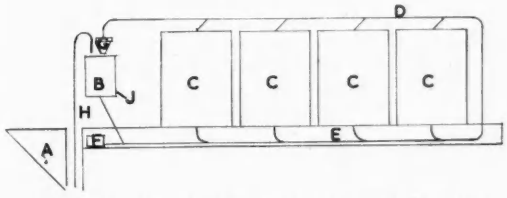
It would be neither economical nor practical always to design the plant operation rate at the same as the intake rate, and therefore some provision must be made to hold the surplus grain which piles up towards the end of a combining day. Two methods are adopted to meet this situation: (1) To construct the receiving pit of such a size as to accommodate all the grain; or, (2) provide a "holding" silo at a point between the receiving pit and the remainder of the plant.

In the case of (1) it is not always practical to construct a large pit because of possible troubles with leakage from ground water, and to asphalt the pit to avoid this possibility is costly; unless the pit is, therefore, of a reasonable size—not exceeding about 4 tons—it is usual to adopt the second method and provide a "holding" silo.

The basic farming data has now been obtained, and from this point the problems resolve themselves in terms of building construction.

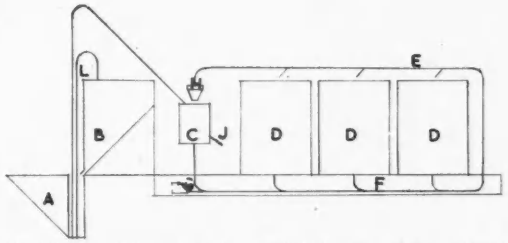
Problems of construction naturally fall into the following groups:—

1. Choice of site.



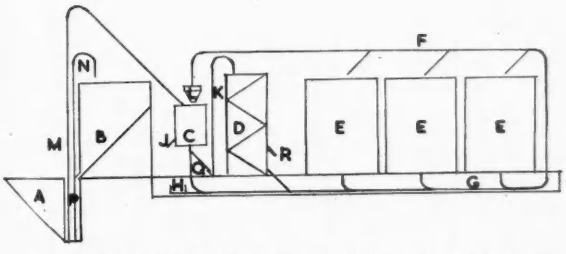
1. SIMPLE BULK GRAIN STORAGE IN BINS, WITHOUT DRYING PLANT.

KEY :—A, SELF-EMPTYING WET PIT ; B, DRESSER ; C, GRAIN STORAGE SILOS ; D, OVERHEAD PNEUMATIC CONVEYING DUCTING ; E, LOW LEVEL DUCTING ; F, MOTOR AND AIR FAN ; G, CYCLONE ; H, BUCKET ELEVATOR ; J, SACKING-OFF POINT.



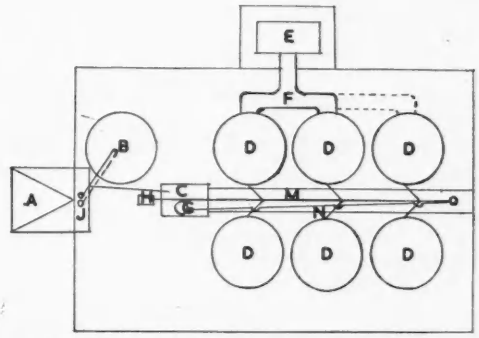
2. SIMPLE BULK GRAIN STORAGE IN BINS, WITH PRE-STORAGE BIN, WITHOUT DRIER.

KEY :—A, SELF-EMPTYING WET PIT ; B, SELF-EMPTYING HOLDING SILO ; C, DRESSER ; D, GRAIN STORAGE SILOS; E, OVERHEAD PNEUMATIC CONVEYING DUCTING ; F, LOW LEVEL DUCTING ; G, MOTOR AND AIR FAN ; H, CYCLONE ; J, SACKING-OFF POINT ; L, BUCKET ELEVATOR TO HOLDING SILO.



3. BULK GRAIN STORAGE IN BINS, WITH INDEPENDENT DRYING PLANT.

KEY :—A, SELF-EMPTYING WET PIT ; B, SELF-EMPTYING HOLDING SILO ; C, DRESSER ; D, DRIER ; E, GRAIN STORAGE SILOS; F, OVERHEAD PNEUMATIC CONVEYING DUCTING ; G, LOW LEVEL DUCTING ; H, MOTOR AND AIR FAN ; J, SACKING-OFF POINT ; K, BUCKET ELEVATOR TO DRIER ; L, CYCLONE ; M, BUCKET ELEVATOR TO DRESSER ; N, BUCKET ELEVATOR TO HOLDING SILO ; P, BANJO PIT ; Q, OUTLET FROM DRESSER TO ELEVATOR TO DRIER ; R, SACKING-OFF POINT FROM DRIER.



4. LAYOUT PLAN OF VENTILATED BIN GRAIN DRYING PLANT AND STORAGE.

KEY :—A, SELF-EMPTYING WET PIT ; B, SELF-EMPTYING HOLDING SILO ; C, DRESSER ; D, GRAIN STORAGE SILOS ; E, AIR HEATING PLANT ; F, WARMED AIR DUCTING ; G, CYCLONE ; H, MOTOR AND AIR FAN ; J, BANJO PIT ; M, LOW LEVEL PNEUMATIC CONVEYING DUCTING ; N, OVERHEAD DUCTING.

Fig. 3.—Four types of bulk grain storage bins, 1 *and* 2 *without drier ;* 3 *and* 4 *with drier.*

O

2. Type of building to be used for housing the plant:

(a) New.

(b) Adaptation.

3. Construction of silos.

4. The arrangement of layout to suit conveying system to be used.

If use can be made of existing buildings to house the store it very often leads to a considerable saving in capital expenditure, and use is often made of the old corn barn for this purpose. If a new building is being erected the choice most often made is that of a standard steel dutch barn with asbestos roofing.

The types of silos in general use can be classified under two headings—those manufactured in quantity and delivered in parts to the job, and those constructed *in situ*. Of the former, the type in most general use is composed of precast concrete parts which are built up in circular shape and encircled with steel bands which take the lateral grain pressure. The *in situ* types are constructed of a variety of materials; for example, brickwork—normally 9 in.—concrete blocks and timber.

Reference to the respective costs of silos is interesting: a square silo, 12 ft. by 12 ft. externally by 14 ft. high, in 9 in. reinforced brickwork, holding just over 27 tons of barley, will cost in the region of £130, and the same capacity bin in precast concrete (that is, the manufactured bin) would cost, delivered and erected, approximately £80, with an allowance of £10 for delivery. A laminated timber bin would cost in the region of £150.

It has been our practice to recommend the use of the manufactured bin wherever it was reasonably possible. The reason for this has been that, particularly on mixed farms, there may be a change of emphasis in the future, resulting in less corn being grown. It would then be very easy to take down the precast bins and so leave the building free for other uses. Silos formed of *in situ* concrete construction are not normally recommended.

The overall costs of grain storage installations vary considerably, and it is very difficult to give accurate figures. The differences occur in the type and kind of store as well as the variations in building costs from one area to another. Furthermore, site conditions can vary the cost very greatly from farm to farm. A store and equipment for the storage of 200 tons of grain can, in my experience, vary from £8 to £14 per ton stored, and, if ventilated drying silos are included, the cost ranges from £12 to £20 per ton. In neither case does this include the cost of a building for housing the store.

It cannot be over-emphasised that from the point of view of the architect or designer of the store, it is essential to have a full appreciation of both field operations and types and kind of plant machinery, as well as a knowledge of the behaviour of grain in bulk, before attempting design.

DISCUSSION

MR. G. J. M. JENKINS, referring to grain driers, said he was disturbed by the appearance of the buildings in many cases, and would like Mr. Hollinrake to say what he considered to be the minimum height to which such structures could be erected, to give them a pleasant silhouette when they formed part of groups of farm buildings.

MR. HOLLINRAKE said he wished to preserve the beauty of the countryside and realised that many of these structures were anything but beautiful. The height could vary to some extent. Within limits, the higher the silo the less the grain storage would cost. The height of grain storage silos varied between 10 and 20 ft., with an average of 15 or 16 ft.

MR. GERHARD ROSENBERG pointed out that the kind of conveyor which was used made a difference. With a conveyor which fed the silo at 45 deg. it was necessary to add a considerable height to the height of the silo itself. That could be avoided by using a pneumatic type which fed horizontally, but he would not advocate choosing a conveyor for appearances sake.

MR. ERNO GOLDFINGER said that as an architect he was not frightened of the unsightliness of a silo; he thought that it was rather a good shape, even in the countryside.

MR. G. M. KINGSFORD asked whether Mr. Hollinrake's department prepared plans and got building tenders for farmers direct.

MR. HOLLINRAKE replied that they did not. They were prepared to help the farmer by giving a diagrammatic outline, or a one-eighth sketch, but they did not give him working drawings. They always said to the farmer: "You are going to spend a lot of money on this work, and we cannot supervise it for you. If you employ an architect it will save you money." He regretted to say that that advice was seldom followed.

[Our report will be concluded next week.]

SURFACE TREATMENT OF MEDIEVAL WALLS

New Church Advisory Leaflet

A RECENT REPORT of the restoration work at Great Hampden church in Buckinghamshire in *The Times* mentioned as "one of the most interesting tasks," the "replacement of the distemper on the inside walls by the medieval milk tempera, from an old recipe of Professor A. E. Richardson, RA, Professor of Architecture at the Royal Academy Schools, who had acted as honorary consultant throughout the work."

Professor Richardson's recipe for milk tempera, states the Central Council for the Care of Churches, is one of several formulas for specially prepared limewash based on medieval prescriptions, the use of which is being revived by architects who specialise in the repair of old buildings. Those who know its excellent properties use a limemilk dressing rather than a modern oil-bound distemper, because it gives a more congruous finish to an old, uneven wall, and has certain practical advantages, such as resistance to dampstaining.

Instructions for preparing and applying limewash for such purposes are given in a leaflet just published by the Central Council for the Care of Churches, called "Limewash—a note on re-decorating churches," obtainable from the Church Information Board, Church House, Dean's Yard, Westminster, SW1, price 4d. (by post 5½d.).

COMPARATIVE PRICES OF MATERIALS

Copyright *The Builder*

		January, 1939	*January*, 1953	*January*, 1954
BRICKS—		£ s. d.	£ s. d.	£ s. d.
FLETTONS	per 1,000	2 6 3	5 8 0	5 10 0
BLUE WIRECUTS ..	per 1,000	7 4 0	20 12 0	21 10 6
GLAZED BRICKS ..	per 1,000	24 0 0	64 0 0	64 0 0
THAMES BALLAST ..	per yd. cu.	7 3	—	—
PIT SAND	per yd. cu.	7 9	19 11	1 0 5
¾ in. SHINGLE ..	per yd. cu.	7 3	18 5	18 11
¾ in. BROKEN BRICK ..	per yd. cu.	11 3	19 3	19 3
PORTLAND CEMENT ..	per ton	2 2 0	4 11 0	4 15 0
PORTLAND STONE ..	per ft. cu.	4 5	7 5	7 5
SLATES—				
24 in. by 12 in. ..	per 1,000	31 5 0	96 7 6	100 16 9
20 in. by 10 in. ..	per 1,000	20 15 0	65 10 6	68 10 9
16 in. by 10 in. ..	per 1,000	14 7 6	42 12 6	42 18 3
TILES—				
MACHINE-MADE ..	per 1,000	4 2 6	12 4 0	13 5 0
HAND-MADE ..	per 1,000	4 17 6	12 2 0	12 15 6
SOFTWOOD—				
CARCASSING QUALITY ..	per std.	£18—£22	£95—£105	£90—£100
JOINERY QUALITY ..	per std.	£28—£35	£110—£130	£105—£125
HARDWOOD—				
EUROPEAN OAK	per ft. cu.	14 0	1 17 6	1 17 6
ENGLISH OAK ..	per ft. cu.	10 0	1 5 0	1 5 0
HONDURAS MAHOGANY	per ft. cu.	15 0	2 15 0	2 15 0
MOULMEIN TEAK ..	per ft. cu.	15 0	3 0 0	3 0 0
R.S. JOISTS FABRICATED ..	per ton	16 10 0	50 10 0	51 15 0
⅝-in. MILD STEEL RODS ..	per ton	15 0 0	36 2 6	37 1 6
1-in. GALVANISED BARREL	per ft. run	5¾	11¾	11¼
SHEET LEAD	per ton	23 0 0	145 15 0	128 10 0
LINSEED OIL	per gal.	2 11	18 6	13 3
GROUND ENGLISH WHITE LEAD	per cwt.	2 10 0	8 16 9	8 2 0
WHITE LEAD PAINT ..	per gal.	16 8	3 0 0	2 18 0
RED LEAD	per cwt.	1 18 0	7 4 3	6 12 0

SOIL STABILISATION IN CONSTRUCTION OF FOUNDATIONS

By a Correspondent

IN certain conditions there is a great advantage to be obtained in foundation work by the injection of various materials into the soil or in cracks in rock. The methods, which are generally known as artificial cementation, are usually adopted for one of two purposes, namely, to seal a porous strata and thus prevent the flow of water, or to stabilise a soil so as to increase its strength. Typical applications of the first purposes are the sealing of leaks in dams, reservoirs and docks, making watertight the linings of tunnels and the waterproofing of basements. Increasing the strength of a soil by cementation methods is usually adopted in excavation work to prevent collapse of the sides of the excavation, to strengthen an embankment or to increase locally the bearing capacity of the strata. Some of the methods may produce a material which will remain stable for a considerable time, but generally the extra strength, except for the stabilising of embankments, is utilised for a short period only.

The materials commonly used may be divided into three general types, namely, suspensions, solutions, and emulsions; the solutions may consist of single fluids or of two fluids.

The suspensions may be mixtures of cement and water, cement and clay and water, and thixotropic suspensions such as bentonites. (A thixotropic suspension is one which when vibrated is fluid, and after being left undisturbed forms a gel.) Suspensions are used for grouting rock fissures or for grouting beds of coarse sand and gravel.

The solutions used are chemical compounds of which the basic constituent is sodium silicate. A second chemical is used which coagulates when mixed with the sodium silicate to form a stiff silica gel. The various methods, most of which are patented, differ from one another largely with respect to the injection procedure. In some cases the sodium silicate is injected first and the second chemical afterwards, while in others the two are injected at the same time. The two most well-known processes are the Joosten and K.L.M. systems. In the Joosten process sodium silicate or hydro-fluorositic acid, depending on the soil, is first injected, after which a solution of strong brine is injected which immediately precipitates a silica gel. Unconfirmed compressive strengths between 400 and 1,200 lb. per sq. in. have been obtained, but the method cannot be used in clay soils. In the K.L.M. method, a mixture of sodium silicate and another chemical are injected at one time as the injection pipe is slowly withdrawn.

A RECENT DEVELOPMENT

The emulsions used are those of bitumen and water. This is a more recent development than the use of cement suspensions and chemical solutions. The emulsions can be pumped into sands of medium grain size, and they act primarily as waterproofers for the soil into which they are injected.

Before deciding on the method to be used in a given case it is necessary to make a careful investigation of the site. The choice of the type of material will depend largely on the size of the openings into which the injected material must penetrate. Cement suspensions can be pumped into cracks as small as 0.1 mm. in width and into sands having an effective grain size of about 0.8 mm. The chemical solutions can be pumped into sands having an effective grain size of 0.1 mm. The grain size of sands in which the emulsions will be effective is about the same as for the chemical solutions. Silts or clays cannot be stabilised successfully.

All the materials are pumped into the ground with pressure pumps. Information must be obtained as to the permeability of the soil in order that the capacities of the pumps and the required pressures can be determined. The permeability of the soil also determines the spacing of the injection pipes, because the material pumped through any one pipe must penetrate into the soil a sufficient distance to meet the material pumped through adjacent pipes.

When fissured rock is to be sealed by these methods it is necessary to determine the nature and extent of the fissures and whether the fissures are open or are partly filled with soil which would have to be washed out before the injection material could be forced in. The spacing of the pipes depends largely on the nature of the fissures, and the pipes must be arranged so that all the fissures are filled.

The pressures that are required in the various methods are often as great as 100 lb. per sq. in. and the possible effects of such high pressures must not be overlooked, for in the vicinity of existing structures damage such as the lifting of buildings and streets and the collapsing of sewers and tunnels can be caused.

CONSOLIDATION BY FREEZING

Methods similar to those described but in which the ground is frozen are sometimes adopted in excavation work. These methods have the advantage that they are applicable to any water-bearing soil whatever the grain size may be and they may be applied at greater depths than can the methods using compressed air. Boreholes are sunk about 3 ft. apart around the site of the excavation, and steel tubes 4 in. to 6 in. diameter and closed at the lower end are inserted. Inside these tubes are placed 2-in. tubes with open ends, and the tubes are connected to the brine delivery and return mains. In the Poetsch process, ammonia is used as the refrigerant and calcium chloride brine is circulated through the tubes. An area of frozen ground is formed around each tube and these areas increase in size until they are continuous. The sheer strength of the soil is increased and compressive strengths of 150 lb. per sq. in. attained. The Dehottay process uses liquid carbon dioxide which is circulated through the freezing tubes.

AN ELECTRICAL METHOD

Fine-grained soils such as silt, loess, boulder clay and all kinds of clay and loam may be drained and thus stabilized for excavation work by electro-osmosis. In this method electrodes are sunk in the ground and an electric current passed through them; the action consists in a movement of water from one electrode to another, and if the negative electrode is made in the form of a drainage well the water may be pumped from these wells. The method was developed in Germany and applied during the war to a number of projects in Norway, including the U-boat pen at Trondheim.

LIVERPOOL'S HOUSING PROGRAMME

Approval for Negotiated Contracts

BY a majority of 76 votes to 64, Liverpool Conservatives on the City Council have authorised Dr. Ronald Bradbury, FRIBA, City Architect and Housing Director, to negotiate with two firms of contractors working on the Kirkby Estate with a view to entering into further contracts.

They were Messrs. Lloyd and Cross with regard to sewers, etc., and the Unit Construction Co., Ltd., with regard to houses.

Labour members pressed that the work should be put out to tender or that it might be done by direct labour, but ALD. H. N. BEWLEY, chairman of the Housing Committee, declared that the only concern of his committee was to get the houses built. The argument for extending the contracts was overwhelming. Prices were low and continuity was assured.

Cuts in Expenditure

LIVERPOOL CORPORATION has formulated a number of schemes which, it is expected, will involve a capital expenditure during the coming financial year of more than £10m.

Originally the estimated projects were put at £10,532,563, and this includes a matter of £6,238,000 in respect to housing, for which several contracts have already been let.

Cuts have been made by the Corporation's finance committee amounting to nearly £739,000.

Police Housing

LIVERPOOL WATCH COMMITTEE is contemplating the erection of a number of houses for police purposes, the view having been expressed that the housing shortage is interfering with recruiting.

The housing committee has intimated that it is not prepared to alter its allocation system in favour of police accommodation, and the watch committee wants at least 100 houses to start with and another 200 later on.

BRITAIN'S BRIDGES

Need for Improvements

THE TRAVELLING PUBLIC must be alarmed by the Ministry of Transport's announcement that Britain has thousands of weak bridges which are a menace to both road and rail movement, writes a correspondent. Although a programme of bridge strengthening and reconstruction is to be carried out, it will still leave many weak bridges, and traffic over them is to be restricted. The position is evidence of the Government policy of patch-up and hope which has confused the maintenance and development of our roads and hampered road transport. Restriction of road movement means loss of time and waste in unnecessarily high road transport costs, which are reflected in the cost of living.

The only realistic action, in face of the fact that 75 per cent. of everything moved in Britain goes by road, is to make our road communications fit 20th century traffic, and not to make the traffic fit old roads and inadequate bridges. The British Road Federation is shortly to issue a publication featuring the need for imaginative action to provide modern bridges and tunnels which will allow the free flow of road traffic over and under rivers and railways.

THE CLERK OF WORKS

His Duties and Functions Defined—3

By NORMAN P. GREIG, BA, Barrister-at-Law, HonFIQS, FIArb, FRSanI

The Clerk of Works in Practice

THE matter below, condensed from a variety of sources, and fully in accordance with decisions in the Courts, will be found, it is submitted, to have the effect of reducing to a minimum the possibility of misunderstandings and friction between those in authority on the site. As regards the C.o.W.'s hours of attendance no one would suggest that they should strictly conform with those of the workpeople, but they should be "considerable," or, as another authority puts it, "normal hours." It is, however, submitted that his attendance should be governed to some extent by the particular work in progress, e.g., he would be expected to be present even at an early hour when the mixing of concrete for surface work foundations or filling is in progress.

Before suggesting any rules of procedure it is again emphasised that it is only with a clear understanding of, and appreciation of each other's position, that friction or bad feeling can be prevented between architect, clerk of works and the general foreman. The clerk of works should fully appreciate the position of the latter, who will naturally have the interests of the contractor at heart. The architect, on the other hand, though the agent of the employer is nonetheless expected to hold the scales evenly between employer and contractor; a duty implicitly laid upon him by the contract itself and expressly, if he be a member, by the Code of Professional Practice of the RIBA. In this connection it can be clearly inferred that the clerk has no power to bind the employer by accepting or approving work already done or varying the work by omissions or extras unless such power is expressly or implicitly entrusted to him; but even then the architect remains liable.

RULES OF PROCEDURE

The following are some rules of procedure and duties of the clerk of works:—

1. In case of an emergency, and in the absence of the architect, the C.o.W. should act to the best of his ability and then get into communication with the architect at the earliest opportunity and seek to get confirmation of the action he has taken. In regard to any instructions given to him by the architect he would be wise to get written confirmation of them as soon as possible if not originally issued in writing.

2. Though the inspector of the employer the latter should not give instructions to the C.o.W. If the employer should do so then the C.o.W. should courteously explain that he will pass on these orders or instructions to the architect. A little tact might be needed here.

3. The C.o.W. should have a full understanding of the contract drawings, specification and conditions of the contract; as a rule, his training and qualifications will be directed to this end. But it is not his business to construe the contract in case of doubt or difficulty, nor is it the architect's either, unless the contractor, as a short way out of an impasse, agrees to accept the architect's ruling. The ultimate word in the interpretation of a (building) contract is with the Court, but in many contracts (e.g., the RIBA Standard Forms) questions of construction can be referred to the arbitrator under the contract. Where this is done, however, there is always the danger of a mistake in law being manifest in the award which may ultimately result in its being set aside.

EXAMINATION OF MATERIALS

4. Being on the site for a good part of each day he is in the best position to examine the materials used, and to be used, in the contract works, and the quality of the workmanship. If he is satisfied that these are not in accordance with the specification (or bills of quantities, if none), the C.o.W. should point out the position personally to the contractor, instruct him to discontinue their use, etc., and report as early as possible to the architect.

5. A similar procedure should be adopted in regard to any work in the contractor's workshops, intended for the contract works. He is clearly entitled, if not to order the removal of improper work, at least to instruct the contractor to discontinue it, reporting as before to the architect.

6. The position of the clerk of works in regard to an architect who is obviously neglecting his supervision of the job is one requiring much tact. It is not the C.o.W.'s business to reprimand but, it is submitted, he should have a friendly chat with the architect, arranging a meeting if necessary for that purpose, and then emphasising particularly the embarrassing position he (the C.o.W.) is in, as a result of his superior's conduct, e.g., being compelled to issue instructions in regard to matters strictly within the architect's province, though the responsibility for them is not his.

7. Daily reports are not expected of the clerk of works; weekly (except in exceptional circumstances) are sufficient and usual. They should contain *inter alia* details as to the number of men on the works, the progress of the works (helpful to the architect when consulting his progress charts), delays in the delivery of materials, particulars of sub-contractors' work, and the weather conditions during the work. To assist him in this part of his task, he should keep a diary and record at the time, which is usually possible, matters and particulars to be referred to and used later.

8. The C.o.W.'s relations with the general foreman will often require a special degree of care. The modern general foreman is, as likely as not, a practical man, with technical qualifications who has also taken a special course at some school of building or similar institution in administration, etc. Readers of this newspaper will be aware of the efforts now being made to produce a nationally recognised qualification (evidenced by a certificate following an examination) for general foremen in the building trade, through special courses in technical colleges and the like, in the administration and organisation of building sites, planning and co-ordination of the work of various building trades and the handling of operatives. The effect of the presence on the site of a further well-qualified executive, acting on behalf of the contractor, and in constant touch with the clerk of works is likely, unless care and tact are exercised by all, to provide many opportunities for argument and disputation, which it should be their particular business to avoid.

There should always be complete liaison between the clerk of works and the general foreman, particularly when it is remembered that under the RIBA Forms, at least, instructions to the general foremen are deemed to be those to the contractor himself.

THE NOMINATED SUB-CONTRACTOR

9. The C.o.W.'s association with the nominated sub-contractor requires a special word. Under our present system of sub-contracting the contractor is responsible to the employer for the sub-contractor's work, a fact made quite clear in the sub-contracting form in general use. It appears, however, that some clerks of works show reluctance to concern themselves with nominated sub-contractors' work on the ground that as the architect chose the sub-contractor he should take responsibility for his work, particularly if it be of a very specialised nature.—e.g., steel and steel construction work. It is impossible to say how far this attitude is general, but no such consideration, it is submitted, should be allowed to interfere with the clearly understood function of the clerk of works, viz. to act as inspector of the employer under the architect's direction.

10. The C.o.W.'s services in connection with the original setting out of the works will be invaluable by directing the supervision, with the aid of the architect's dimensioned drawings, and the passing on of further necessary information, for the setting-out up to ground level. (See RIBA Standard Form, Cl. 4, for example.)

11. Where extra work is done by daywork, requiring the keeping of time-sheets and records of materials, the clerk of works can relieve the architect of much donkey-work over their verification, and also that of the work-people's names, should the architect require these particulars, usually at the end of the week following that in which the work has been executed.

The above suggestions are not intended to be exhaustive, but are applicable to most building contracts. Suggestions have been made that the RIBA Standard Form might be amended to indicate more definitely the duties of the clerk of works under the contract. Without committing oneself on this point it is suggested that perhaps the specification might detail such duties. Be this as it may, a little tolerance and tact, together with a realisation of the rights and duties of others, will often prove an excellent substitute for the written word.

[*Concluded*]

"TOO RAPID" BUILDING AT BIRMINGHAM

City Architect's Report Adopted

TOO RAPID BUILDING was partly to blame for bad workmanship in new municipal houses at Birmingham, stated a report by the City Architect, Mr. A. G. Sheppard Fidler, FRIBA, which was adopted at a meeting of Birmingham City Council on January 5.

ALD. J. J. GROGAN, of the Labour group, complained that there were not enough clerks of works to supervise the gangs building municipal houses. He criticized the "labour only" system of building, under which only labour was provided and not materials. No one had bothered to find out if the work was being done correctly or how long it took, he said. ALD. A. F. BRADBEER agreed that an unsatisfactory situation had been disclosed and said that his committee was examining the whole question of labour.

BRICK DELIVERIES

Haphazard Facilities for Unloading on Building Sites

By N. G. BREEZE

THE delivery of some "heavy" materials to building sites is sometimes the signal for much haggling. It is evident that, in the interests of all parties, someone should be available to give a "clean" signature, or otherwise, as the occasion demands. It is also essential that labour to assist with such off-loading be made available in both a supervisory manner and manually, should the method of discharge not be mechanical. Deliveries of bricks fall into this category. Due to the lengthy delay involved between ordering and delivery of bricks, contractors, quite wisely, do not attempt any work on certain sites until bricks are actually ready for the site. On occasion they arrange for deliveries to be made before any work is commenced, coping with this by means of a mobile column dispatched to the site under a prearranged schedule with the supplier.

It has been the unfortunate experience of many drivers to arrive on sites only to find that, despite prearranged notice and assurances, labour to receive and assist with off-loading is not available. Sometimes piecework gangs are available, but since the discharge of vehicles is not reckoned to be any part of their responsibility the difficulty remains. Resulting from this, there is often an exchange of words and expletives, tempers are raised and a generally unsatisfactory state of affairs exists. It should be pointed out that most suppliers have conditions of sale which make stipulations concerning the delivery of bricks. This point is usually covered something like this: "The purchaser will unload within a reasonable time at his own cost . . ."

Normally drivers are expected to assist with off-loading, and in fact do so, but it is not right to expect them to discharge several thousand bricks unaided. In the heat of such a moment the temptation to jettison the goods in an unorthodox manner is great. The practice of giving drivers a "drink" for off-loading unaided is not fair to them or their employers, and in the long run could have repercussions on the contractor. Numerous cases of this sort of thing are being reported nowadays and the danger exists that possibly rates will have to be adjusted to cover this form of contingency. Valuable time is wasted probing these problems; recriminations and bad feeling follow in the wake of questions concerning excess waiting time, "lost" return loads, and so on.

The large contractors almost always provide ample off-loading facilities, and many of the smaller firms are careful to observe the conditions implied. There are, however, culprits who do not bother about honouring arrangements made for the receipt of goods at specific times. Where such goods emanate locally the matter can usually be righted speedily over the telephone, but far greater problems are posed where goods have been conveyed appreciable distances.

The Other Side

A dispute is a two-sided affair, and it would therefore be unfair to discuss this problem without reference to the other side. What about the occasions when loads have been promised and not materialised?

Well, breakdowns do occur, even in the most carefully operated fleet, and there is always the human element to contend with. Manufacturers and merchants do strive with their own transport and with aid of hired fleets to provide an efficient delivery service. With 5- 6- 10- and 12-ton loads to contend with they cannot operate efficiently if they are often called upon to chase a gang of invisible men.

Shortage of materials is an inconvenience which we all wish behind us. Until that day comes, matters will run more smoothly if we make the best of existing conditions.

WOODWORKERS' BALLOT

Communists Suffer Defeat

BY his re-election as president of the Amalgamated Society of Woodworkers, Mr. J. H. Mills, of Birmingham, has secured a victory over Mr. A. G. Hall (until recently an avowed member of the Leicester Communist Party) who opposed him.

Other Communists who sought election in the Society's ballot were also defeated. Votes for Mr. Mills numbered 17,838 against 2,069 for Mr. Hall. Moreover, while Mr. Mills's vote was heavily up, Mr. Hall's was down compared with their last contest.

These facts were given in an article in *The Sunday Times*, whose correspondent adds:

Another member of the five-man executive committee, Mr. George Brinham, was also re-elected with an enormous majority. Mr. Brinham, one of the younger trade-union leaders, is a member of the Labour Party's National Executive, and was leader of the ASW delegation which went to Russia last July. Its report is known to have caused the Communist Party considerable secret annoyance.

Another member of that delegation, Mr. T. Boulter, of Romford, registered a spectacular gain in the election for a London representative on the union's General Council, defeating a Communist of national repute in the building trades, Mr. J. Pollard, of Islington, who was defending his seat.

Mr. Pollard also failed to retain his seat on the union's London district committee. This committee now includes only one Communist, the others being Labour Party members well known for anti-Communist activities.

The Communist Party regard these ASW developments as disastrous. Their representation has fallen in five years from one of strength to virtual elimination.

BRITISH STANDARD

Copper Tube Fittings

A REVISED BRITISH STANDARD, BS864:1953, for "Capillary and compression fittings of copper and copper alloy for use with copper tube," has now been issued. This revised standard supersedes the 1945 edition. It relates to the following three types of tube fittings of copper and copper alloy for use in conjunction with copper tube complying with BS 659 "Light gauge copper tubes for water, gas and sanitation" and with BS 1386 "Copper tubes to be buried underground."

(a) Capillary fittings, in which the joint is made by the flow of solder by capillarity along the annular space between the outside of the tube and the inside of the socket fitting, the size of this annular space being dimensionally accurate within close limits.

(b) Compression fittings, Type "A" in which the joint is made by the compression of a loose ring or sleeve, or part of the fitting, on to the outside wall of the tube.

(c) Compression fittings, Type "B," in which the joint is made by the compression of a manipulated portion of the tube at or near its end against the face of the body of the fitting or against a loose ring or sleeve within the fitting.

This standard does not attempt the complete dimensional standardisation of any of these types of fittings, since the variety in the designs and methods of production already established by the various manufacturers makes any such attempt impracticable. It does, however, specify such dimensions and requirements as are essential to ensure satisfactory installation and performance.

The standard applies to the most commonly used types of fittings of nominal sizes ranging from ⅛ in. to 2½ in. inclusive. It includes a number of general requirements relating to design, construction and workmanship. It specifies a hydraulic test and, in the case of cast fittings, a test for porosity, and indicates the appropriate working pressures for cold-water installations and hot-water installations at various temperatures.

Copies of this standard may be obtained from the British Standards Institution, Sales Branch, British Standards House, 2, Park-street, London, W1, price 4s.

A PRODUCTIVITY REVIEW

Furniture Industry's Output

THE LATEST of the series of Productivity Reviews published by the British Productivity Council deals with furniture, and the investigation was undertaken to record steps taken to increase productivity in the industry since the war. Close contact was established with the aeronautical engineering industry during the war, and the experience gained was valuable, the main effect being felt in the organisation of industry. A forward move was the setting up of the Joint Industrial Council as well as a Government Working Party.

The main organisations concerned themselves with raising general efficiency, and co-operation between employers increased, particularly since the war. It was a common complaint that retailers insisted on over-frequent changes of design, which were injurious to production and did not seem essential in order to sell furniture. In an industry which was changing from craft to factory there had been a great deal of experiment in systems of production. It was only lately that careful planning of production, the close control of progressing, the use of handling equipment of various kinds, including conveyors, attention to layout in order to make possible a flow of production through the plant, and detailed cost analysis had been employed generally.

In the Appendix instances are cited where in recent years individual firms have stepped up output. In one, a change in methods of production resulted in cutting the time for production of a suite from 13 hours to 6¼ or seven hours; in another, bonus earnings for operatives had increased since the war from an average of between 15 and 20 per cent. to between 60 and 80 per cent. on all types of work; in a third, output in the upholstery department has been trebled, mainly through using latex foam rubber instead of traditional springing materials.

The evidence available indicated that there was a big potential market for well-made furniture in this country if it could be produced at lower prices. Copies of "Review of Productivity in the Furniture Industry" are obtainable, price 2s., from the British Productivity Council, 21 Tothill-street, SW1.

TRADE NEWS

Water Repellant

A stable, colourless water repellant solution which is understood to develop maximum efficiency on masonry, brickwork and concrete within 24 hours has been produced by Silicaseal, Ltd., of Newcastle-on-Tyne. This water repellant solution, known as "Silicone," is claimed to be suitable for all porous materials, and to prevent staining and efflorescence while still permitting the material to breathe.

Space Heater

Maximum radiation and convection of heat from the grate coupled with a minimum loss of heated air from the room are claimed for the "Reff Space Heater" manufactured by Reff Allied Products, Ltd., of Aylesbury. Sufficient air is taken from the room to allow combustion and give the 1 to 1½ air changes per hour necessary for ventilation. This fouled air is burnt and does not return. The air sucked into the flue is supplied by a "draught by-pass" from under the floor. Cool air from the room is circulated through a metal heat exchanger behind the fire and when reheated is drawn out through an upper grating. The installation is understood to be equally satisfactory with or without a continuous burner, and to be easily fitted into most existing fireplace surrounds.

Hardboard

A hardboard which possesses a special silky finish on the reverse side is being manufactured by Ljusne-Woxna, A/B, of Sweden, and is claimed to be suitable for panelling of every description, as well as interior fittings, furniture, partitioning, and wall and ceiling linings. A semi-hardboard with a similar finish is also produced by the company, and its uses include general display work, partitioning and linings, and exhibition stands. Known as the LW hardboard and semi-hardboard, they have a press size of 4 ft. by 18 ft., and any size within these limits can be supplied in thicknesses of up to 3/16 in. for hardboard and ¼ in. for semi-hardboard. Wallets containing samples of the various thicknesses obtainable, and giving technical data for easy reference, are being distributed by Martin Olsson and Sons, Ltd., Melbourne House, Aldwych, WC2, who are the agents for LW boards in the UK, excluding Northern Ireland.

Multi-Purpose Woodworker

To satisfy the requirements of the carpenter or joiner who wants an inexpensive machine that will carry out several operations, the "Inca" multi-purpose woodworking machine, manufactured in Switzerland by Injecta, Ltd., is now being distributed in England by Startrite Sales, Ltd., Gads Hill, Gillingham, Kent, an associate company of Startrite Engineering Co., Ltd. The "Inca" comprises a saw bench unit, having an alloy table and extension giving 16½ in. by 25¼ in. area, with self-aligning rip-fence, special mitre gauge and saw guard. It will take up to a 7-in. blade and has a rise and fall table which tilts through 45 degrees. The saw spindle, which accommodates also the moulding head, a wobble saw and corner-locking cutter head, is extended to take ⅜-in. capacity drill chuck, disc sander, sanding drum and boring bits. A range of three sizes of boring bits, 5½ in. to 7 in. wood, metal and plastic saw blades, nine standard shapes of moulding cutters and three sizes of corner-locking cutters are available.

Cement Glaze

A handbook for architects and surveyors, giving fullest information on their "Glazement" permanent interior wall finishes, has been produced by Robb's Cement Enamel Finishes, Ltd., 245, Vauxhall Bridge-road, SW1. "Glazement" cement glaze is a pure white cement, tinted where necessary and gauged with a special liquid which causes it to dry with a natural glaze. It can be applied *in situ* direct to a Portland cement and sand rendered wall, shuttered concrete or directly on to flush-pointed brickwork. The two become one homogeneous mass, and the surface is understood to withstand steam and dilute acids, and give a minimum of 12 to 14 years' service.

Automatic Control

The problems associated with the remote control of diesel-driven generating plant include the difficulty experienced in stopping a heavy flywheel-driven engine within a small time limit, and the operations necessary to start a stationary generating plant situated perhaps a half-mile away. A simple time delay push-button "stop-start" switch has been used by Hampson Industries, Ltd., West Bromwich, to control their diesel and petrol-driven generating plant. Time delays from five seconds up to two minutes can be obtained without the use of relays. One button is marked "start," and when depressed connects the starter motor on the engine to the starter battery for sufficient time to enable the engine to start, after which the button automatically returns to initial position. There is therefore no need to keep one's finger on the button. To stop the engine the operator pushes the stop button switch, which automatically actuates a stopping device on the engine for periods of up to one minute, until the engine has stopped. The time delay can be governed by an adjustable needle valve. The control has become an integral part of the Hampson remote control system, and these manufacturers hold the patent right for the application of this method.

New leaflets on

SLIDING DOOR GEAR

HAVE you copies in your reference file of the latest leaflets showing the range and applications of KING Sliding Door Gear? From the lightest domestic installations to heavyweight power operated doors, there's a KING door set for every need. Get the details—write for your copy.

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NEWS IN BRIEF

Founder Honoured

Mr. W. Clifford, founder of the Wolverhampton and District Association of Employer Plumbers, was honoured by the Association on January 8 when he was presented with a watch as a tribute to his services.

1,000th Post-War House

The 1,000th post-war house to be completed in the Borough of Middleton was opened by the Mayor, Councillor A. Horridge, JP, on December 23 last. Manchester housing authorities are also building in Middleton in an overspill area called the Langley Estate.

New Year Honours

Among those connected with the Building Industry who were honoured in the New Year's List is Alderman R. Colin Large, JP, of Luton, who was awarded the OBE. Alderman Large is regional president of the Federation of Master Builders.

Mr. W. F. Cottrell, chairman of the Wilcot (Parent) Co., Ltd., was awarded an OBE for his services to the City of Bristol.

Firm's Centenary

Celebrating their centenary this year, James Ball and Son, of Cowes, held a dinner in honour of the occasion at the Regency Restaurant, Newport, recently, when a grandson of the founder, Mr. S. G. Ball, was present, with guests from local authorities and firms. Veteran employees, some of whom had spent more than 50 years in the service of the firm, were among those present, and one of them, Mr. Moth, received a gold watch as a token of appreciation for his unbroken service.

Retirement

Mr. Arthur Young, Chief Inspector of Works in the Liverpool Corporation architectural and housing department, has just retired after serving with the Corporation since 1925. He joined the service with the City Building Surveyor's Department and was appointed to his office in 1939. To mark his retirement, Dr. Ronald Bradbury, FRIBA, City Architect and Housing Director, on behalf of his colleagues presented him with a gold hunter watch.

Holidays with Pay

The Birmingham Local Joint Committee for the Building Industry has decided that the first week of holiday to be taken in 1954, under the Holidays with Pay Scheme, shall be the normal working week commencing June 28 and terminating July 3, 1954, both dates inclusive.

Course in Concrete Technology

East Ham Technical College are to hold a series of nine weekly lecture-demonstrations dealing with the following: Concrete mix design; concrete quality control; formwork; mixing, transporting, placing and curing; vibration; RC—some practical aspects; casting prestressed beams; PC—theory and systems; PC—stressing beams. The Cement and Concrete Association is arranging for specialist lecturers. The course is suitable for experienced craftsmen, foremen, general foremen, executive and supervisory staffs. The lectures will be on Wednesday evenings at 7 p.m., commencing January 27. The fee for the course will be 1gn. Applications to the Head of the Building Dept., East Ham Technical College, Arragon-road, East Ham, E6.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intenton that the details given should indicate fair average prices of materials not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchant's warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	1	5
Pit Sand	,,	1	0	5
Washed Sand	,,	1	2	3
¾ in. Shingle	,,		18	11
¾ in. Broken Brick	,,		19	3
Pan Breeze	,,		9	6
Fine or Coarse Foamed Slag Aggregate	per ton	2	18	1
2 yds. of fine and 2.6 yds. of coarse per ton				

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area.				
6-ton loads and upwards, site	,,	4	15	0
1 to 6 tons, site	,,	5	4	0
Ferrocrete Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	3	0
1 to 6 ton do. site	,,	5	12	0
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices				
Red, Buff or Khaki Colorcrete in 6-ton lots	,,	6	16	6
Other colours according to colour				
In 4-ton lots from 210s. 3d. to 434s. 3d. per ton.				
White Portland Cement	,,	12	15	3
Under 1 ton	per cwt.		15	6
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	7	6
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £9 2s. 9d. to £10 16s. 3d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	0	9
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	5	15	0

BRICKS

		£	s.	d.
Full Loads				
First Hard Stocks	per 1,000	11	0	6
Second Hard Stocks	,,	10	4	6
Mild Stocks	,,	8	13	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C. District Commons	,,	5	10	0
Cellular do.	,,	5	10	0
Keyed do.	,,	5	12	0
Rustics	,,	6	15	0
Cellular Rustics	,,	6	15	0
Single Bullnose do.	,,	6	10	0
Sandfaced	,,	7	10	0
Cortex Facing Bricks	,,	6	5	0
Best Blue Pressed Staffs (London Stations)	,,	23	17	6
Do. Bullnose (London Stations)	,,	24	11	6
Blue Wire Cuts (London Stations)	,,	21	10	6
Midhurst Lime Bricks (London Sites)	,,	9	18	0
Uxbridge Whites (London Sites)	,,	8	16	6
2½ in. Best Stourbridge Fire Bricks (London Stations)	,,	22	3	0
3 in. do. (London Stations)	,,	26	11	6
2½ in. Machine-made Sandfaced Red Facings (London Sites)	,,	13	9	6
2½ in. Machine-made Multi Red Facings (London Sites)	,,	13	14	6
2½ in. Hand-made Sandfaced Red Facings (London Sites)	,,	14	3	6
2½ in. Hand-made Sandfaced Multi-Colour Facings (London Sites)	,,	14	3	6
2½ in. Surrey Clamp Burnt Multi Stock Facings (London Sites)	,,	13	2	0
2½ in. Surrey Kiln Burnt Multi Stock Facings (London Sites)	per 1,000	13	18	0
Glazed Bricks (London sites), White, Ivory, Brown—				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0
Second quality — 10% Bests. Cream and Buff £3 extra over White. Other colours, hard glaze. £8 10s. 0d. extra over White.				

PARTITION SLABS, etc.

Delivered Central London Area.

	Minimum lorry loads.			
Hollow Clay Partition Blocks (Keyed)				
2 in.	140 yds.	per yd. sup.	4	3
2½ in.	140 yds.	,,	4	6
3 in.	120 yds.	,,	5	0
4 in. (6 cavity)	95 yds.	,,	6	7
Half blocks at no extra charge.				
Clinker Concrete.				
2 in.	100 yds.	,,	3	6
2½ in.	85 yds.	,,	4	1
3 in.	75 yds.	,,	4	10
4 in.	55 yds.	,,	6	0
Cranham				
2 in.		,,	6	5
2½ in.		,,	7	1
3 in.		,,	8	3
4 in.		,,	10	2
4½ in. Load bearing quality		,,	11	2
Floor Blocks				
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads		per 1,000	31	10	0
4 in. do.		,,	34	13	0
5 in. do.		,,	39	7	0
6 in. do.		,,	46	16	0
7 in. do.		,,	54	1	0
8 in. do.		,,	61	15	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

	Over 2 tons	Over 100 Pieces under 2 tons	Under 100 Pieces under 2 tons
Best Quality	+67½%	+97½%	+107½%
B.S.S. Best do.	+10% +67½%	+10% +97½%	+10% +107½%
Tested Quality	+37½% +67½%	+37½% +97½%	+37½% +107½%
B.S.S. Tested do.	+47½% +67½%	+47½% +97½%	+47½% +107½%

		£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths)	per 1,000	9	19	0
4 in. do.	,,	13	1	0

STONE

		£	s.	d.
Bath Stone—				
Monks Park	per ft. cube		6	8
St. Aldheim Box Ground	,,		7	8
Delivered in railway trucks at South Lambeth B.R. Western Region				
Doulting Stone Random Blocks. Delivered London area	,,		7	5
Beer Stone. Delivered London area	,,		7	0
Portland Stone—				
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region	,,		7	5
Hopton-Wood Stone—				
F.O.R. Quarries, Wirksworth, Derbyshire—				
¾ in. Slabs for wall lining, sawn two sides in random sizes up to 5 ft. and not over 15 ft. super in area	per ft. sup.		6	2
1¼ in. Slabs for paving, sawn two sides as above described	,,		8	6
Yorkshire Stone—Blue Robin Hood Quality. Delivered to site London in 6-ton lots.				
9 in. × 3 in. Rubbed, weathered, throated and stooled cills	per ft. cube	3	1	9
12 in. × 6 in. do. do.	,,	2	4	3
12 in. × 3 in. Plain coping, twice throated	,,	1	14	0
12 in. × 3 in. Weathered and twice throated coping	,,	2	5	6
14 in. × 6 in. do. do.	,,	2	1	0
4½ in. × 9 in. Plinth, rubbed on top and face	,,	1	16	9
3 in. sawn two sides Slabs, random sizes	per ft. sup.		6	6

STONE—*continued*

		£	s.	d.
Templates and Cover Stones, 3 in., 4 in, and 6 in. thick, edges coped for rendered brickwork ...	per ft. cube	1	2	6
Do. do. fair one edge for fair faced brickwork		1	6	9
Hard York—				
12 in. × 2 in. Square Steps, rubbed on top and edge	per ft. run		7	10
14 in. × 3 in. Round-nosed Steps, rubbed on top and front	per ft. cube	2	2	0
12 in. × 6 in. Plain Steps, rubbed top and front ...	,,	1	16	9
2 in. Rubbed and Jointed Paving, given sizes ...	per ft. sup.		7	6
2 in. Sawn Paving, edges squared, in random sizes	per yd. sup.	2	11	9

TILES and PANTILES

	£	s.	d.
Delivered London area by road in 6 tons or over per 1,000			
Machine-made Pantiles and French pattern Tiles from Lincolnshire district	28	18	6
Hand-made Pantiles Berkshire district	41	18	6
Hand-made Double Roman Bridgwater district ...	56	17	6
Hand-made 10½ × 6½ tiles Berkshire district	12	15	6
Machine-made 10½ × 6½ Staffordshire district	13	5	0
Hand-made Hip and Valley tiles per doz. ...	1	8	6
Machine-made Hip and Valley tiles do.	1	6	3
Concrete tiles 10½ × 6½	6	18	6
do. Interlocking (49S)	18	9	6

NOTE.—Breakage in transit, purchasers' responsibility

SLATES

	£	s.	d.
First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.			
24 × 12	100	16	9
22 × 12	86	6	6
22 × 11	78	0	6
20 × 12	73	3	3
20 × 10	68	10	9
18 × 10	50	17	0
18 × 9	43	15	0
16 × 10	42	18	3
16 × 8	33	13	3

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

				£	s.	d.
Softwood—						
Joinery quality	Ex. Wharf	per standard		£105 to £125		
Carcassing quality	do.	,,		£90 to £100		
1 in. Tongued and Grooved Flooring	do.	,,		£106	0	0
Hardwood—						
Mahogany— African S.E. ...	do.	per ft. cube		1	5	0
do. Honduras do. ...	do.	,,		2	15	0
Oak European do. ...	do.	,,		1	17	6
do. Japanese do. ...	do.	,,		1	15	0
do. English Logs sawn	do.	,,		1	5	0
Teak 8 in. average S.E.	do.	,,		3	0	0
Walnut African Logs sawn	do.	,,		1	1	0

DOORS (in Lots I-II)

	£	s.	d.
Delivered London area.			
1¾ in. 4 Horizontal Panel. Pattern 4 in. deal			
2 ft. 0 in. × 6 ft. 6 in. ... ... each	1	12	0
2 ft. 3 in. × 6 ft. 6 in. ... ... ,,	1	13	0
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	1	14	6
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	1	16	9
2 in. do., but top panel open. Pattern 4 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	2	10	6
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	13	6
2 in. Panel, top panel open. Pattern 2 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	2	3	9
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	6	6

SUNDRIES

		£	s.	d.
Delivered London area				
1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton) ...	per yd.		5	8
1½ in. do. (67 yds. to 1 ton)	,,		7	4
2 in. do. (52 yds. to 1 ton)	,,		8	11½
2½ in. do. (45 yds. to 1 ton)	,,		10	3
3 in. do. (39 yds. to 1 ton)	,,		11	5½
Quantities under 1 ton add 1d. per ½ in. of thickness.				
½ in. imported Insulation Board, quantities over 5,000 sq. ft.	per 100 sq. ft.	2	2	6
¼ in. Hardboard do.	,,	2	3	6
5/16 in. do. do.	,,	3	2	6
7/16 in. Asbestos Flat Building Sheets	per yd. sup.		2	11
Roofing Felt, 1-ply	,,		1	6
do. 2-ply	,,		1	9
Best Scotch Glue, in slabs	per ½ cwt.	5	0	0
do. pearl	,,	5	5	0
Croid Glue	28 lb.	2	5	0
Cut Nails, 3 in. (1-ton lots)	per ton	54	5	0
do. 4 in. and up (1-ton lots)	,,	50	15	0
Wire Nails, 3 in. (4-cwt. lots)	per cwt.	2	15	9
do. 4 in. and up (4-cwt. lots)	,,	2	12	3

METALS

STEEL JOISTS, ETC.

		£	s.	d.
Basis Joists—				
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area	per ton	37	2	6
Extra for sizes				
3 in. × 1½ in.	,,	3	10	0
3 in. × 3 in., 4 in. × 3 in., 5 in. × 2½ in. ...	,,	1	5	0
4 in. × 1¾ in.	,,	3	0	0
4¾ in. × 1¾ in., 24 in. × 7½ in.	,,	2	0	0
5 in. × 3 in., 22 in. × 7 in.	,,	1	0	0

		£	s.	d.
6 in. × 3 in.	per ton	1	10	0
9 in. × 7 in.	,,		5	0
10 in. × 4½ in., 12 in. × 5 in.	,,		15	0
5 in. × 4½ in., 6 in. × 4½ in., 7 in. × 3½ in., 7 in. × 4 in., 8 in. × 4 in., 9 in. × 4 in., 10 in. × 5 in., 10 in. × 8 in., 12 in. × 8 in., 13 in. × 5 in., 14 in. × 5½ in., 14 in. × 6 in., 14 in. × 8 in., 15 in. × 5 in., 15 in. × 6 in., 16 in. × 6 in., 16 in. × 8 in., 18 in. × 6 in., 18 in. × 7 in., 18 in. × 8 in., 20 in. × 6½ in., 20 in. × 7½ in.	,,		10	0
Average prices not for awkward work.				
Steel angles average price	,,		38	7 6
Steel tees average price	,,		39	7 6
Fabricated work delivered London—				
R.S. Joists cut and fitted	,,		51	15 0
Compound girders	,,		57	0 0
Stanchions	,,		62	0 0
Compound stanchions	,,		65	0 0
In Roof Work—Trusses and Purlins	,,		77	0 0
Average prices not for awkward work.				
Mild Steel Ferro-Concrete bars to BSS785 ex London				
Stock ⅝ in. diam., and upwards	,,		37	1 6
¼ in. diam.	... per ton extra		3	12 0
7/16 in. do.	,,		2	17 0
⅜ in. do.	,,		2	2 0
½ in. do.	,,		1	7 0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts:

Galvanised Tube—	W.I. Fittings	Malleable Fittings
Class A — 3¾%		
Class B + 5½%	Light +20½%	Malleable List — 39½%+35%
Class C + 21½%	Heavy +27¾%	
Black—		
Class A — 23½%		
Class B — 13½%	Light + 8½%	Malleable List — 39½%
Class C — 1½%	Heavy + 16%	

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths	Gutters	Nozzles	Stop Ends
3 in.	3/1	2/9	/10
3½ in.	3/4½	3/-	/10
4 in.	4/4	3/4	1/2
4½ in.	4/9	3/8	1/5
5 in.	5/4	4/1	1/7

C.I.O.G. GUTTERS

3 in.	4/-	3/7	/11
3½ in.	4/5½	3/7	1/2
4 in.	4/10½	3/8	1/6
4½ in.	5/4	4/4	1/8
5 in.	5/9½	4/11	1/11

C.I. RAIN-WATER PIPES

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	6/4	3/4	4/9
2½ in.	6/7	3/8	6/7
3 in.	7/5	4/8	7/1
3½ in.	8/4½	5/7	8/5
4 in.	9/8½	6/9	9/11

L.C.C. COATED SOIL PIPES

2 in.	7/5½	5/9	7/-
2½ in.	7/10½	6/4	8/8
3 in.	8/10	7/-	10/5
3½ in.	9/11	8/8	12/1
4 in.	11/3½	9/9	14/3

Above prices for gutters rain-water and soil pipes for under 3 cwt. lot only. Lots over 3 cwt. see List No. 3200 dated May 1, 1952, plus 7½% and tonnage allowance. 4-ton lots 5 per cent. 2-ton lots 2½ per cent.

L.C.C. COATED DRAIN PIPES

In 9-fts.	cwt.	qr.	lb.	per yd.	Bends	Branches
4 in.	1	1	17	20/1	13/10	24/5
6 in.	2	0	1	29 10	28/10	49/11

ASBESTOS RAIN-WATER PIPES AND FITTINGS

Orders under £30 less 12½ per cent. discount.
Orders over £30 less 17½ per cent. discount.

		2 in.	2½ in.	3 in.	4 in.
Pipes 6/ft. lengths	per yd.	3/6	3/9	4/6	6/-
Shoes	each	2/3	2/6	3/-	4/-
Single Branches ...	,,	3/6	4/3	5/-	7/-
Bends square or obtuse	,,	2/6	2/9	3/6	5/-
Swan Necks 4½ in. proj.	,,	2/9	3/6	4/-	5/6
do. 6 in. do.	,,	3/-	3/6	4/6	6/-

ASBESTOS O.G. GUTTERS AND FITTINGS

		4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths	per yd.	3/3	3/7	4/3	5/2
Drop ends ...	each	2/3	2/4	2/7	3/3
Stop Ends... ...	,,	/9	/10	/11	1/1
Angles and nozzles	,,	2/8	3/1	3/7	4/3
Union Clips ...	,,	1/4	1/7	1/11	2/3

ASBESTOS HALF-ROUND GUTTERS AND FITTINGS

		3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths	per yd.	2/4	2/9	2/10	3/4	4/8
Drop ends ...	each	2/-	2/3	2/6	2/9	4/-
Stop ends ...	,,	/8	/9	/10	/11	1/1
Angles	,,	2/3	2/6	2/9	3/-	4/-
Nozzles	,,	2/-	2/3	2/6	2/9	4/-
Union Clips ...	,,	/11	1/-	1/1	1/3	1/10

METALS—*Continued.*

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	39 10 0
Mild Steel Bars	37 8 0
Mild Steel Hoops	38 3 0

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft sheets C.R. and C.A.—	
20 gauge	45 12 6
24 gauge	46 17 6
26 gauge	48 17 6
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	52 17 0
24 gauge	54 17 0
26 gauge	57 12 0
Galvanised Flat sheets C.R. and C.A.—	
20 gauge	53 17 0
24 gauge	55 17 0
26 gauge	58 12 0

Metal Windows.—Standard Metal Windows, B.S. 940. Prices on application British Metal Window Manufacturers' Association, Ltd.

PLUMBERS' BRASS WORK, COPPER, ZINC, ETC.

Delivered in London area.

All per doz.	M.O.H. ½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	70/-	104/-				
Toilet bib cocks for iron ...	90/-	129/-				
Screw down stop cocks for iron	60/-	87/-	171/-	294/-	420/-	741/-
do. with two unions for lead	81/-	120/-	213/-	381/-	504/-	1122/-
Double nut boiler screws ...	15/-	21/-	38/-	39/-	54/-	76/-
Heavy Croydon ball valves ...	62/-	141/-	216/-	394/-	558/-	
Plumbers' union brass lead to iron	15/9	19/-	31/6	55/-	67/9	132/-
	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	27/-	33/-	48/-	75/-	96/-	125/-
Brass sleeves		25/-	25/-	45/-	60/-	61/-
	1¼ × 6 lb.	1½ × 6 lb.		2 × 7 lb.	3 × 7 lb.	
Lead P. trap with brass cleaning screws	60/-	75/-		120/-		205/-
Lead S. trap do.	72/6	90/-		147/6		265/-

Solder	s. d.
Plumbers' ... ... per lb.	3 0
Tinmen's ... ... ,,	3 7
Blow pipe ... ... ,,	3 9

Copper tubes BSS 659/1944 on the basic price of 27¼d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.	Total per lb. d.
⅛ in. × 19 gauge	11⅝	38⅞
¾ in. × 19 ,, ...	10½	37⅜
1 in. × 18 ,, ...	8⅝	35⅞
1¼ in. × 18 ,, ...	8⅝	35⅞
1½ in. × 18 ,, ...	8⅜	35⅝
2 in. × 17 ,, ...	9⅜	36⅞

		£ s. d.
Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras	per ton	291 10 0
Sheet Zinc, 10 gauge, 5 cwt. lots upwards ...	per cwt.	6 13 0
do. 12 gauge do.	,,	6 11 0
Brass tubes basic price, plus gauge and manufacturing extras	per lb.	1 9⅞

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties.

		£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards	per ton	128 10 0
Lead Water Pipe in coils	,,	129 15 0
Lead Soil Pipe, 10 ft. or over 2 in. to 4 in. dia. ...	,,	131 5 0
do. over 4 in. dia.	,,	133 5 0
Lead Gas or Untinned Compo pipe	,,	131 5 0
Extras over Basis for quantities under 1 ton		
5 cwt. and under 1 ton	per cwt.	2 0
3 cwt. do. 5 cwt.	,,	4 0
1 cwt. do. 3 cwt.	,,	6 0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected £83 15s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

				£ s. d.
Coarse Pink in 1-ton loads and over	Delivered on Site		per ton	7 3 3
do. White	do.	do. ...	,,	7 11 0
Sirapite Coarse	do.	do. ...	,,	7 6 3
do. Fine	do.	do. ...	,,	7 14 3
Blue Lias Lime in 6 ton loads			,,	6 5 0
Hydrated Lime do.			,,	5 9 0
Lump Lime do.			,,	4 18 6
White Keen's or Parian Cement in 1-ton loads			... ,,	10 0 9
Pink Keen's or Parian Cement in 1-ton loads			... ,,	9 15 6
Granite Chips in 6-ton loads			... ,,	2 6 3
Hair			per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery.	Delivered site		... per yd.	2 3
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft., ⅜ in. thick, 600 yds. and over in one delivery	Delivered site		... ,,	2 6

PAINT AND DISTEMPER

Delivered London area		£ s. d.
Ceiling Distemper	per cwt.	1 12 0
Washable Distemper	,,	5 12 0
Gloss Paint	per gal.	2 15 0
Snowcem cement paint (in 1 cwt. drums) ...	per cwt.	3 11 0

LEAD PRODUCTS AND OILS.

Ground White Lead 5 cwt. casks	per cwt.	6 13 0
1 cwt. kegs	,,	8 2 9
Genuine White Lead Paint, 20 gal. lots in 1 gal. tins	per gal.	2 18 0
Genuine Red Lead, Dry, 1 cwt. keg	per cwt.	6 12 0
Genuine Linseed Oil Putty, 1 cwt. keg	,,	2 9 0
Size XD quality, 28 lb.	per tin	9 0
Raw Linseed Oil (5 gal.) Drums extra	per gal.	13 3
Boiled Linseed Oil (5 gal.) do.	,,	13 8

SUNDRIES

Turpentine substitute (5 gal.) Drums extra ...	,,	5 6½
do. do. (40 gal. drum) do. ...	,,	4 9
Solignum, Brown (5 gal. cans), Exterior ...	,,	6 6
Creosote (40 gal. barrels)	,,	2 0
Paste Powder (1 lb. packets)	per lb.	1 6
White Lining Paper	per piece	1 4

VARNISHES, etc.

Delivered London area.		£ s. d.
Oak Varnish, Outside or Inside	per gal.	1 12 6
Oak Pale Copal do.	,,	1 15 0
Hard Drying Oak for Inside	,,	1 17 6
Crystal Paper Varnish do.	,,	1 15 0
Eggshell Flat Varnish do.	,,	2 2 6
Finest Carriage Varnish	,,	2 10 0
Front Door Varnish	,,	1 17 6
Japan Gold Size	,,	1 10 0
Black Japan	,,	1 5 0
Brunswick Black	,,	1 0 0
Berlin Black	,,	1 5 0
Terebene	,,	1 5 0
Knotting (1 gal. bottles free)	,,	2 0 0
French and Brush Polish (do.)	,,	1 13 0

GLASS

Delivered London area.

	Per ft. super s. d.
18 oz. Sheet Glass, Ordinary Glazing Quality. Cut Sizes	5½
24 oz. ,, ,, ,, ,, ,, ,, ,, ...	7¼
26 oz. ,, ,, ,, ,, ,, ,, ,, ...	9½
32 oz. ,, ,, ,, ,, ,, ,, ,, ...	1 0
⅛ in. Rolled Plate	9
⅛ in. and ¼ in. Rough Cast	1 0
⅛ in. Figured Rolled and Cathedral, Standard patterns : White	9
do. Standard Tints	1 4½
do. Special Tints	2 9
⅛ in. Cross Flexon, Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 1
¼ in. Wired Cast	1 2
¼ in. Georgian Wired Cast	1 2½

Hollow Glass Blocks—	Each
P.B.2 5¾ × 5¾ × 3⅞ in.	2 9
P.B.3 7¾ × 7¾ × 3⅞ in.	4 2
P.B.32 7¾ × 7¾ × 3⅞ in.	4 2
Radiused Corner Blocks to match up with—	
P.B.2	5 3
P.B.3	6 9
P.B.32	6 9

¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 7
,, ,, ,, 5 ft. sup.	4 5
,, ,, ,, 45 ft. sup.	5 1
,, ,, ,, 100 ft. sup.	5 6

¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 96 in. high or 160 in. wide. G.G. quality—

Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	8 4
Not exceeding 180 ft. sup., or ditto	11 3
Not exceeding 200 ft. sup., or ditto.	16 0

Plates exceeding 200 ft. sup., prices on application.

Substances other than ¼ in. Polished Plate at Special Prices

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity.	Per ft. super. s. d.
18 oz. sheet O.Q.	3,000	4
24 oz. ,, ,, ...	2,000	5½
26 oz. ,, ,, ...	2,000	7¼
32 oz. ,, ,, ...	2,000	9½
⅛ in. Rolled Plate	1,000	7½
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	7½
⅛ in. Cross Flexon, Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte	1,000	10½
⅛ in. and ¼ in. Rolled Plate or Rough Cast ...	2,000	10½
¼ in. Wired Cast, Hexagonal	2,000	1 0½
¼ in. Georgian Wired Cast	2,000	1 0½

The Builder

CURRENT RATES OF WAGES

AS FROM FEBRUARY 2, 1953. **(Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)**

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2	A3
Craftsmen	3/6½	3/6	3/5½	3/5
Labourers	3/1	3/0½	3/0	2/11½

Town.	Grade
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Aldeburgh	A2
Aldershot District	A2
Alfreton U.D.	A
Alnwick	A1
Altrincham	A
Amble	A1
Amersham	A1
Ammanford	A
Andover	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashby-de-la-Zouch U.D.	A
Ashby Woulds U.D.	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone R.D. (parts of)	A
Aylesbury	A2
Aylesby (Yorks)	A
Aylesham	A2
Bagshot	A2
Bakewell U.D.	A2
Banbury	A2
Barnard Castle U.D.	A
Barnoldswick U.D.	A1
Barnsley	A
Barrow-in-Furness	A
Barrow-upon-Soar R.D. (exc. Thrussington A2)	A
Barry	A
Basford R.D. (exc. Willough-by-on-the-Wolds A2)	A
Basingstoke	A1
Bath	A
Batley	A
Baxterley	A1
Beaconsfield & District	A1
Beamish	A
Bearl	A
Bearpark	A
Beccles	A2
Bedale R.D.	A
Bedford	A
Bedlington	A
Bedwas	A
Beeston & Stapleford U.D.	A
Belper U.D.	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick District	A
Beverley	A
Bexhill-on-Sea	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham U.D.	A
Bilsthorpe	A
Birchington	A2
Birkenhead	*
Birmingham C.B.	†A
Bishop Auckland	A
Bishop's Stortford	A
Bispham	A
Blackburn	A
Blackpool	A
Blackwell R.D.	A
Blaydon U.D.	A
Blidworth	A
Blyth	A
Bognor Regis	A2
Boldon U.D.	A
Bolsover U.D.	A
Bolton	A
Bourne End	A1
Bournemouth District	A
Bracknell	A2
Bradford	A
Bradford-on-Avon	A2
Braintree	A1
Breconshire, County of...	‡A2
Brent Knoll	A2
Brentwood	A
Bridlington	A
Brierfield	A
Brighouse	A
Brighton	A
Bristol	A
Broadstairs	A2
Bromsgrove U.D.	A
Brough	A
Broughton (Cheshire)	A
Buckley	A
Bungay	A2
Burnham-on-Crouch	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Calder Valley	A
Cambridge	A
Cannock U.D.	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A2
Carlisle	A
Carmarthenshire, Cnty of	‡A2
Carnarvonshire, Cnty. of	‡A3
Carnforth	A
Castleford	A
Caterham	A
Chapel-en-le-Frith	A
Charmy Down	A
Chatham & District	A1
Cheadle (Staffs) R.D.	A
Chelmsford	A
Cheltenham	A
Chepstow	A1
Chertsey	A
Chester	A
Chesterfield M.B.	A
Chesterfield R.D.	A
Chester-le-Street U.D.	A
Chichester	A2
Chippenham (inc. Chippen-ham Within and Harden-huish	A2
Chorley	A
Clacton	A1
Cleethorpes	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville U.D.	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett	A
Conway	A1
Cornwall, County of	‡A2
Coventry C.B.	A
Cranbrook	A2
Cranleigh	A2
Crawley (Sussex)	A2
Crewe	A
Cromer	A1
Crowborough	A2
Cuckfield	A2
Dalton-in-Furness	A
Darlington District	A
Darwen	A
Deal	A2
Denbigh Town	A2
Derby C.B.	A
Devizes	A2
Devon, County of	‡A2
Dewsbury	A
Didcot	A2
Diss	A2
Doncaster C.B.	A
Dorking	A
Dorset, County of (except-ing Poole, Swanage and Wimborne A1)	A2
Dover	A2
Dovercourt	A
Driffield U.D.	A1
Droitwich M.B.	A1
Dudley M.B.	A
Dunstable	A
Durham City	A
Eastbourne	A1
E. Glam. & Mon. Val.	A
East Grinstead District	A2
Eastwood (Notts.) U.D.	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A2
Epping	A
Exeter	A
Fakenham	A2
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey U.D.	A
Fleetwood	A
Flint	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough U.D.	A
Gateshead	A
Gillingham (Kent)	A1
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of	‡A2
Godalming	A2
Goole M.B.	A
Gosport	A
Grantham M.B.	A
Gravesend	A
Great Yarmouth	A
Grimsby C.B. & R.D. (part)	A
Grimsby R.D. (remainder)	A2
Guildford District	A2
Guilsborough	A1
Guiseley	A
Halesowen M.B.	A
Halifax	A
Halstead	A2
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate	A
Hartlepool	A
Harwich	A
Haslemere	A2
Hastings	A2
Hatfield (Herts.)	A
Haywards Heath	A2
Hemel Hempstead	A
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham U.D.	A
Heysham	A
High Wycombe	A1
Highworth	A2
Hinckley U.D.	A
Hitchin	A
Hoddesdon	A
Horley	A2
Horsham	A2
Horwich	A
Huddersfield	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkley	A
Ingatestone	A1
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A2
Jarrow M.B.	A
Keighley	A
Kendal	A
Kenilworth U.D.	A
Kettering M.B.	A
Keynsham	A
Kidderminster M.B.	A
King's Lynn	A1
Kingskerswell	A1
Kingsteignton	A1
Kirkham	A
Knaresborough U.D.	A
Knowle	A1
Lancaster	A
Leamington M. B.	A
Leatherhead	A
Leeds	A
Leicester C.B.	A
Leighton Buzzard	A1
Letchworth	A1
Lewes	A2
Lichfield M.B.	A
Lincoln C.B.	A
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly	A
London	*
Long Eaton	A
Loughborough M.B.	A
Louth M.B.	§A1
Lowestoft	A
Loxton	A2
Luton	A
Lyneham (Devon)	A2
Macclesfield	A
Maidenhead	A1
Maidstone	A1
Maltby	A
Maldon (Essex)	A1
Malvern U.D.	A1
Manchester	A
Manningtree	A1
Mansfield M.B.	A
March	A2
Margate	A2
Market Harborough U.D.	A
Maryport	A
Matlock U.D.	A1
Melksham	A2
Melton Constable	A2
Melton Mowbray U.D.	A1
Merthyr	A
Middlesbrough	A
Middleton	A
Middlewich	A
Milford Haven	A1
Morecambe	A
Morley	A
Mundesley	A2
Nantwich	A
Nelson	A
Newark-on-Trent R.D.	A1
Newbury	A2
Newcastle-on-Tyne	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A2
Newton Abbot	A1
Northallerton Dist.	A
Northampton C.B.	A
North Shields	A
Norton Radstock	A1
Norwich	A
Nottingham C.B.	A
Nuneaton M.B.	A
Oakham U.D.	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett and Horbury	A
Oxford	A
Oxted	A1
Paignton	A1
Peterborough	A
" Soke	A1
Pickering	A3
Plymouth	A
Pontefract	A
Pontypridd District	A
Portishead	A
Portland Stoneyards	A
Portsmouth	A
Port Talbot	A
Preston	A
Pudsey	A
Pulborough	A2
Radnorshire, County of	‡A2
Ramsgate	A2
Rayleigh	A
Reading	A
Redcar B.	A
Redditch U.D.	A
Redhill and Reigate	A
Ripon	A3
Rochdale	A
Rochester	A1
Rotherham	A
Rugby M.B.	A
Saffron Walden	A2
St. Albans	A
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sawbridgeworth	A
Saxmundham	A2
Scarborough	A
Scunthorpe	A
Selby	A
Sevenoaks	A1
Sheerness	A2
Sheffield	A
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury M.B.	A
Sittingbourne	A2
Skegness U.D.	A1
Skipton U.D.	A
Sleaford U.D.	A2
Slough	A1
Smethwick C.B.	†A
Snettisham	A2
Somerset, County of	‡A2
Southampton	A
Southend-on-Sea Dist.	A
Southport	A
South Shields C.B.	A
Spalding U.D.	A2
Stafford M.B.	A
Staines	A
Stamford M.B.	A1
Stantonwick	A
Stevenage	A
Stockport	A
Stockton R.D.	A
Stockton-on-Tees	A
Stoke-on-Trent C.B.	A
Stoke Orchard	A1
Stourbridge M.B.	A
Stourport U.D.	A
Stowmarket	A1
Stratford-on-Avon M.B.	A
Sunderland District	A
Sunningdale	A1
Sutton Coldfield M.B.	A
Swaffham	A2
Swanage	A1
Swansea	A
Swindon	A1
Swinton U.D.	A
Tamworth M.B.	A
Tenterden	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A2
Thorpe Bay	A1
Thurrock U.D.C. Area (exc. North of, to Billericay A	
Tilbury	A
Todmorden	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Trowbridge	A2
Tunbridge Wells	A1
Tynemouth C.B.	A
Uppingham (Salop)	A1
Uttoxeter U.D.	A2
Wakefield	A
Wallsend B.	A
Walsall C.B.	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick M.B.	A
Wellington U.D.	A
Wells (Norfolk)	A2
Welwyn	A
Welwyn Gar. City	A
West Bromwich C.B.	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth	A1
Whitby U.D.	A1
Whitstable and District	A2
Wickford	A
Widnes	A
Wigan	A
Wigton	A2
Willington	A
Wilmslow	A
Wilts. County of	‡A2
Winchester	A1
Windermere	A3
Windsor and Eton	A1
Wisbech	A2
Witham	A1
Woking (District)	A1
Wokingham	A2
Wolverhampton C.B.	A
Woodbridge	A2
Worcester C.B.	A
Workington	A
Worksop M.B.	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A2
York	A

* For Birkenhead, Liverpool and London the rates are:—Craftsmen, 3s. 8d.; Labourers, 3s. 2¼d. In the case of London the rate beyond the 12-mile radius is:—Craftsmen, 3s. 7¼d. Labourers, 3s. 2d. † Plus 2d. per working day. ‡ This is the County rate and applies except where higher grades are stated. § Regraded as from October 5, 1953.

NOTE.—Carpenters, Joiners and Plumbers in all towns and districts receive 2d. per day Tool Allowances.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is **2s. 7d. per hour.** Women introduced to carry out work other than craft processes, 2s. 3d. per hour.

For Building Trade Wages in Scotland see page 160

OVERSEAS BUILDING

[From Our Own Correspondents]

Australia. — John Fairfax and Sons, the proprietors of the "Sydney Morning Herald," perhaps the oldest newspaper in the southern hemisphere, have announced plans to build the largest newspaper office in Australia and one of the largest in the world. The company has purchased a site for the new building, and construction work on it will begin immediately. It will be completed within 18 months. The site covers an area of 39,000 sq. feet, and the new building will comfortably accommodate the production activities of both John Fairfax and Sons and Associated Newspapers, publishers of the "Sun." A controlling interest in Associated Newspapers was recently purchased by John Fairfax and Sons.

**British West Africa.*—Invitations to tender for the Tema Harbour contract are likely to be issued very shortly. The consulting engineers for the project are Sir William Halcrow and Partners, Alliance House, Caxton-street, Westminster, SW1. It is hoped that the Tema Harbour project will be the introduction to the much larger Volta scheme, and a successful contractor for the first scheme should stand an excellent chance for the second, since he would have the experience and the equipment on the spot. It is understood that arrangements may be made for the equipment to be transferred from one scheme to the other. After the issue of tender documents, a period of three months will elapse, during which it is anticipated that the majority of the contractors will send out high-powered representatives to inspect the site and make other investigations bearing on the preparation of their tender. Tractors and other earth-moving equipment will be required by the contractors, and it has been suggested that the next three months would be an excellent time to explore the possibilities of selling such British equipment. Interested manufacturers might well consider arranging for a representative to be available in the Gold Coast who could contact contractors' representatives whilst everything is still fluid. The representative would, of course, have to be prepared to discuss such matters as local servicing and spare parts facilities and perhaps to undertake to do something special in this field to ensure the use of his equipment during the period of the contract. All inquiries by telephone should be made to the Export Services Branch of the Board of Trade, tel.: Chancery 4411, Ext. 348.

Federation of Malaya and Singapore.—Several new projects are to be launched in the Federation of Malaya. An extension is to be built for the Kandang Kerbau Maternity Hospital at a cost of £200,000, which will include a number of blocks housing a large out-patients' department, maternity wards, clinics, laboratory and staff quarters. In Singapore estimates have been made for a number of interesting building tasks. These are for a bridge at Kallang, a bridge over the Sungei Jurong and an extension of the West Coast road, a new teachers' training college, a new library, and the new Paya Lebar international airport. Total cost for these projects is in the region of £3m. A Government Committee has also recommended the establishment of a £1m. Polytechnic Institute to take 2,000 students. Capital for this undertaking is to be sought from philanthropic foundations and other international organisations.

Plans are in hand for the building of a £40,000 Regional Fisheries Laboratory at Changi. All capital costs for this undertaking are to be borne by UK funds.

Iraq.—The Development Board of Iraq has agreed in principle to the construction of a suspension bridge at Samawa and to the carrying out of a survey of the Bagdad-Ramadi road as a preliminary to its reconstruction. Other plans discussed by the Board concerned a new bridge at Mosul, the construction of two power generators in Mosul and Kirkuk and the proposed cement factories in Kirkuk. The Belgian consultants engaged on the preparation of the specifications for the cement factories made good progress, according to Press reports, and it has been announced that public tenders will shortly be invited for the supply of materials.

It has been decided to build 1,000 small houses in which to accommodate the large numbers of people living on the outskirts of Bagdad.

The Ministry of Agriculture has also announced that it intends to set up a modern agricultural workshop at Mosul to replace the existing inadequate workshop.

Netherlands.—According to Netherlands official news sources, the Minister of Transport and Waterways has ordered the Three Islands Plan, which involves a great deal of construction work to be submitted to a careful technical study. This plan, when put into operation, will join together the islands of North and South Beveland and Walcheren. The Zeeland provincial authorities are pressing for the adoption of this plan, estimated to cost about 40m. guilders, and it seems it will now be carried out. Already the investigation, research and elaboration of a lengthy report has been undertaken and entrusted to the country's Technical Bureau. As well as reclaiming 6,000 acres of land on which building work will be undertaken, there is also an ambitious plan to establish an air station for the Zeeland territory. The plan outlines the building of a dam from South Beveland through the Zandstreek between Katshoek and the eastern point of the North Beveland. There will also be a dam built to form a link between North Beveland and Walcheren, but the precise location remains undecided because of the situation of the town of Veere. One suggestion is that the dam should be so placed that it would project into the Walcheren opening to the north-west of Veere, in which case a canal bed would have to be dug in the land to be drained, to keep the Walcheren water levels and movements under control and to avoid shutting off the fishing harbour of Veere. Another proposal is that the town of Veere should be left lying on the open water and that the dam should run south-east of the town. This project will be one of the largest undertaken in recent years and may involve the use of extraneous help and imported materials.

Pakistan.—The Government of Pakistan has sanctioned the building of three woollen mills, two in the Punjab and one in the province of Hyderabad near the River Indus. The two factories in the Punjab are owned respectively by Messrs. Dawood Corporation and Messrs. Vallabhai Kamruddin and will be erected near Karachi. German and Japanese engineers are at present in Pakistan supervising the construction of woollen mills at Lawrencepur, near Attock. One of these mills, when completed, will be the largest in the country. Another mill is to go up at Daulatpur, in East Pakistan, which will house 250 looms. Six jute mills have also been sponsored by the Pakistan Industrial Development Council. The Omi Cotton Spinning Company, of Osaka, Japan, is to set up a mill in Pakistan jointly with a Karachi firm.

A petroleum seaboard installation is being erected at Patanga, in East Bengal. Covering an area of 116 acres, the installation will have a total storage capacity of 18m. gallons of petroleum products. A factory is also being erected at Guptakhal, near the Chittagong Airport, for the manufacture of oil containers.

**USA.*—Mr. Edward J. Clausen, 10965, Bluffside-drive, North Hollywood, California, has expressed an interest in being appointed representative for UK manufacturers of materials-handling equipment such as fork-lift trucks, pallet-jacks, all types of conveyors, steel bins and racks. Firms interested in this inquiry should write direct, by air, to Mr. Clausen, enclosing literature and dollar price lists. All inquiries by telephone should be made to Chancery 4411, Ext. 901.

* From the Board of Trade Special Register Information Service.

No change in prices of Blockcraft Mosaic Flooring

Future quotations will show no increase despite the inclusion of Purchase Tax.

Blockcraft Flooring Co. Ltd.
Blockcraft House
Sun St., E.C.2. BIS. 4044

New Canadian Venture

Taylor Woodrow's wholly-owned subsidiary, Taylor Woodrow (Canada), Ltd., has bought a controlling interest in Monarch Mortgage and Investments, Ltd., which, with a subsidiary company, is responsible for large-scale building and civil engineering developments in Canada. The purchase price, one million Canadian dollars, represents 53.9 per cent. of the common stock of the company which has been established since 1927. Monarch Mortgage and Investments, Ltd., owns a number of apartment blocks in the Toronto area. Its subsidiary, Monarch Construction and Realty, Ltd., a land development company, is at present engaged on large-scale construction developments, including the most modern complete shopping centre in Toronto.

THE SCOTTISH BUILDER

Model Building By-laws Issued

NEW model building by-laws which, if adopted generally in Scotland, will greatly help to reduce costs and to speed up house building, were published recently by the Department of Health for Scotland (HMSO, price 5s.). Every local authority is being very strongly urged by the Department to introduce building by-laws on the lines of the new model with the minimum of delay.

The new by-laws, one model for burghs and another for counties, have been drawn up with the advice of a technical working party set up by the Secretary of State in April last year to revise the old models, with special reference to "changes in building standards and techniques in this and other countries and to economy in the use of materials."

At present, say the Department in a circular which is being sent to all local authorities along with the new by-laws, the development of new building techniques is being hampered, and attempts at economy stultified, by the outmoded pattern of the existing arrangements.

"In many districts there exist no by-laws at all; where they do exist they are out of date. The newest are based upon the model by-laws issued by the Department in 1937. The standards as laid down then are restrictive and sometimes inappropriate or even insufficient when applied to modern building methods and materials."

The aim of the new models, which are prepared on a flexible basis to take account of the ever-widening variety of modern building methods and materials, is to let local authorities retain full control over building standards, yet at the same time to secure economies and to give the builder freedom to use a wider range of materials and techniques than has hitherto been possible under by-laws drafted on conventional lines.

The Department of Health have stressed the desirability of local authorities adopting the models with as few variations as possible, so that builders operating in several local authorities' areas will not, as at present, have to struggle with a great variety of specifications.

By-laws have, so far, been based on specifications for various parts of the structure, using traditional materials and methods; but they have been found to be restrictive, inappropriate and sometimes insufficient when applied to modern techniques. To achieve the flexibility necessary to admit new materials and developments in building techniques, a new form has been evolved for the by-laws. Instead of laying down, for example, that walls are to be of bricks or stone and of a certain thickness and construction, the new by-laws will, without being specific as to materials and sizes, require walls to withstand specified loads and stresses, to resist fire to a certain degree, to be suitably weatherproof and, where necessary, to have an adequate resistance to the transmission of heat and sound.

Any material or form of construction may be used that will satisfy the relevant requirements. But these requirements are of necessity expressed in precise technical terms; so to meet the usual case and to make it easier for those without specialist knowledge to see how the requirements can be met, specifications in terms of conventional materials are given as examples of constructions achieving the necessary standards. Thus, for a two-storey house a cavity wall of brick 10½ inches in thickness, roughcast on the outside and plastered on the inside, satisfies the by-law requirements on structural strength and stability, fire resistance weatherproof qualities and resistance to the transmission of heat.

The Department of Health emphasise that the possible ways of meeting the by-law requirements are by no means confined to these specifications, which cover only a few main examples. Different or entirely new methods should not be discouraged or rejected merely because they do not conform with the sample specifications, but should be judged solely according to whether or not they measure up to the technical standards.

"Pre-stressed concrete is an example. There is at present no accepted code for its use and no specific reference to it in the by-laws has therefore been possible. But the use of pre-stressed concrete is becoming widespread and it offers scope for considerable economies. It is of the utmost importance that no obstacles should be placed in the way of designers wishing to use them or other new or improved techniques and materials which meet the relevant performance standards or can be readily adapted to meet them."

Apart from their new form, the models incorporate some important new provisions. Requirements are laid down for means of escape from fire in various classes of buildings ranging from blocks of flats to public buildings, and there are detailed provisions about the fire resistance of walls, floors, etc. These provisions in combination should reduce fire risks to a very great extent. A good level of sound insulation between houses and flats will be ensured by by-laws laying down the resistance in "decibels" to be attained by separating walls and floors. Requirements are also given for the thermal resistance of walls, floors and roofs of houses.

A Permanent Cure for SMOKY CHIMNEYS

The 'Ventamatt' prevents down-draught and increases up-draught, irrespective of wind direction. There are no moving parts, no small holes to get choked and the design is of the straight through type to facilitate sweeping. Specified and used by Public Authorities, Architects, Builders and Property owners everywhere.

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VENTAMATT

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46/25

SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from February 2, 1953. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen, 3s. 6½d.; Labourers, 3s. 1d.

For apprentices, the rates are:

Year.	Percentage of Craftsman's rate.	For week of 44 hours. s. d.
1st	25	38 11½
2nd	33⅓	51 11½
3rd	50	77 11
4th	66⅔	103 10½
5th	75	116 10½

For female labour, the rates are:

	s.	d.
Operatives on craft operations (at end of probationary period)	3	1
Operatives on labouring operations (at end of probationary period)	2	9½

Scotland's Housing in November

THERE WERE 3,155 new permanent houses completed in Scotland in November, making it the best November ever for house completions and bringing the total of completions for the first 11 months of 1953 up to 35,122. This exceeds by over 4,000 the number completed in the whole of 1952, the previous record year.

This emerges from figures in the monthly housing return for November issued by the Department of Health for Scotland and the Ministry of Housing and Local Government and published, on January 4, by HM Stationery Office, price 2d.

The total of new permanent houses built in Scotland under the post-war programme now stands at 179,894. Including temporary houses and accommodation made available by conversion and adapting of existing premises altogether 218,501 new homes have been provided.

Comparative figures of houses completed for the first 11 months of 1953 and for the same months of 1951 and 1952 are:—

	1951	1952	1953
January	1,367	2,232	2,826
February	1,814	1,558	2,639
March	2,013	2,707	3,695
April	1,729	2,000	3,079
May	1,801	2,207	3,180
June	2,086	3,516	4,088
July	1,343	1,812	2,326
August	1,513	2,147	3,163
September	2,501	3,647	3,753
October	1,934	2,822	3,218
November	2,011	2,591	3,155
TOTALS	20,112	27,239	35,122

Scotland's total in November of 3,155 new permanents includes 2,955 built by local authorities and the Scottish Special Housing Association, 150 by private enterprise, and 50 by Government Departments. In England and Wales 26,225 new permanent houses were completed in November.

Codes for Brickwork

THE DEPARTMENT OF HEALTH FOR SCOTLAND have arranged for the construction by the Scottish Special Housing Association of a block of three-storey flats at Sighthill, Edinburgh, to illustrate the Codes of Practice for brickwork and load-bearing walls. These flats are now nearing completion and have shown that several thousand bricks per flat are saved when these Codes are applied.

A lantern lecture describing the research on which the Codes were based will be given by F. G. Thomas, PhD, MICE, MIStructE, of the Building Research Station, Garston, on January 19, at 2.30 p.m., in St. Andrew's House, Edinburgh. This

will be followed by a description of the problems met with in the demonstration flats, given by R. W. Pearson, MSc(Eng), AMICE, of the Ministry of Works, the engineer in charge.

The flats at Sighthill Loan off Wester Hailes-road, Sighthill, will be open for inspection from 10 a.m. to 12.30 p.m. on January 19. They are not completed, but the structure is open to view.

NEW BUILDINGS

Aberdeen.—Plans prepared and approved for alterations and additions for the Scottish Agricultural Industries, Ltd., Blaikie Quay, to be erected at 56 to 64, Frederick-st., for which the architects are George Bennett Mitchell & Son (F&A), West Craibston-st., Bon-Accord-sq., West Aberdeen.

Aberdeen.—Corporation to erect at the Northfield housing site a new library and community centre at an est. cost of £15,000. The architect is Alexander B. Gardiner, FRIBA, Housing Offices, Broad-st., Aberdeen.

Glasgow.—Plans prepared for alterations and additions at 242-256, Buchanan-st., for which the architects are Will B. Wright & Kirkwood (F&A), 3, Woodside-pl., Woodlands-rd., Glasgow.

Glasgow.—Plans prepared for new electricity station at Simshill by the architect of the Scotland Electricity Board, 127, Almada-st., Hamilton West.

Glasgow.—Plans prepared and approved for J. C. Watt (Meats), Ltd., for extension to their Avondale works, for which the architects are Gavin Paterson & Son (A), 6, Cadzow-st., Hamilton.

Glasgow.—Plans prepared for the Archdiocese of Glasgow's new Sacristy, etc., to be erected at St. Constantine's Church, Ulst-st., Govan. The architect is Alexander McAnally (A), 176, St. Vincent-st., Glasgow.

Glasgow.—Plans prepared for additions and alterations for Mr. James Pinkerton of Millerston, at Hogganfield. The architect is John A. Wingate (F), 5, Oswald-st., Glasgow.

Lanarkshire.—Plans in hand for 66 houses for the Scottish Special Housing Association, to be erected at Larkhall. The architect is J. Austin Bent (A), 15, Palmerston-pl., Edinburgh.

Lanarkshire.—Plans prepared for new office buildings for Alexander Stephens & Co., Ltd., Linthouse Shipbuilding Yard, Linthouse. The civil and constructional engineers are Hugh Frazer & Partners, 3, Blairbeth-ter., Burnside, Rutherglen.

Lanarkshire.—Plans in hand for new housing scheme at Acre-rd. East, Maryhill-rd., Maryhill. The civil engineers are Kyle & Frew, 3, Claremont-gdns., Clifton-st., Glasgow.

Shetland Isles.—Plans have been prepared for the Scottish Special Housing Association, Ltd., and approved by the Department of Health for the erection of 32 houses at Lerwick at an est. cost of £67,359. The architect is J. Austin Bent (A), 15, Palmerston-pl., Edinburgh.

Tollcross.—Plans in the hands of their own architects for two schemes; one for staff accommodation and one for new station which are to be erected at their Lanarkshire Iron Works by Stewart & Lloyds, 41, Oswald-st., Broomielaw, Glasgow

West Lothian.—CC has plans in hand and approved for new Library Buildings which are to be erected at Bathgate. The architect is George P. Booth, Master of Works Offices, County-bldgs., Linlithgow.

The Builder FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JANUARY 19.

***†Chesham UDC.**—27 bungalows, community centre and warden's dwelling, Fullers Hill. L. C. Powell (F), Norfolk House, Station-rd. Dep. £2 2s. Tenders by February 9.

JANUARY 20.

***†Wellington RDC.**—12 houses, Preston. W. B. Bond, quantity surveyor, Windsor House, 49/50, Calthorpe-rd., Edgbaston, Birmingham. Dep. £2 2s.

***†Wimbledon BC.**—Two flats at Nos. 62-64, Wandle-rd.; and two flats at Nos. 26-28, Landgrove-rd. BE&S. Dep. £2 2s.

JANUARY 21.

***Newcastle Regional Hospital Board.**—Alterations and extensions South Shields General Hospital, and conversion and extension North Ormesby Hospital, Middlesbrough. R. Dobbin, Sec. to Board, "Dunira," Osborne-rd., Newcastle-upon-Tyne, 2.

JANUARY 22.

***†Isle of Ely CC.**—Divisional police station and court house, Wisbech. County A, March. Dep. £4 4s. Tenders by February 20.

***†Liverpool Reg. Hosp. Board.**—New 1,000-bedded colony at Greaves Hall, Banks, in three phases. V. Collidge, Secretary to the Board, 19, James-st., Liverpool, 2.

JANUARY 23.

***†Essex CC.**—Alterations St. Peter's C of E school, Coggeshall, and hutted classrooms, County primary school, Coggeshall. County A, Chelmsford.

***†Essex CC.**—Extension to 4th floor County Hall, Chelmsford. County A, Chelmsford.

***†Essex CC.**—Hutted classrooms, Rush Green County primary school, Dagenham. County A, Chelmsford.

JANUARY 25.

***†Birmingham City C.**—Four flats, Braithwaite-rd., Sparkbrook, and four dwellings, Folliott-rd., Lea Hall. City A. Dep. £2 2s. each. Tenders by February 18.

***†Brentwood.**—Erection of St. John Fisher Catholic primary school, Debden LCC estate, for Essex CC and Trustees of the Roman Catholic Diocese, Brentwood. R. A. Boxall (A), 161, London-rd., Chelmsford.

JANUARY 27.

***†Chigwell UDC.**—32 flats, Rectory-la., Loughton. Tooley & Foster, architects, Midland Bank-chbrs., Buckhurst Hill.

***Ealing BC.**—Public convenience, Cleveland Park, W5. BE&S. Dep. £2.

***†Essex CC.**—War damage reinstatement to Harold Court County primary school and Upminster Gaynes County secondary school. County A, Chelmsford.

JANUARY 29.

***West Riding of Yorks CC.**—All trades for new multiple clinic at Corporation-st., Morley. County A, Wakefield. Dep. £2 2s.

***West Riding of Yorks CC.**—All trades for new residential nursery at Walton-la., Sandal, Wakefield. County A, Wakefield. Dep. £2 2s.

JANUARY 30.

***†South Western Reg. Hosp. Board.**—Villa, Coney Hill hospital, Gloucester. Regional A, 27, Tyndalls Park-rd., Bristol, 8. Dep. £2 2s.

***†South Western Reg. Hosp. Board.**—New block, Bristol Mental hospital. Regional A, 27, Tyndalls Park-rd., Bristol, 8. Dep. £2 2s.

FEBRUARY 1.

***†Beddington & Wallington BC.**—Nine flats, "Marlesford Court," Croydon-rd. BS.

***Berkshire CC.**—Senior police officer's house, Donnington Priory estate, Newbury. County A, Wilton House, Parkside-rd., Reading. Dep. £2 2s.

***†Coventry Corp.**—Clinic, Jardine-cres. City A. Dep. £2 2s. Tenders by March 1.

***East Barnet UDC.**—12 flats, Park-rd. E&S. Dep. £2 2s.

FEBRUARY 4.

Bexley BC.—Underground r.c. building in connection with Civil Defence control centre. BE&S. Dep. £2 2s

FEBRUARY 5.

***Chertsey UDC.**—Workshop, Pyrcroft-rd. E&S. Dep. £1 1s.

***Esher UDC.**—Garage accommodation between streets, Cobham. E&S. Dep. £1 1s.

***Southport CBC.**—(1) Chemistry laboratory, King George V school and other minor works, also (2) metal windows; (3) pressure piling; (4) electrical installation. R. Edgar Perrins, TC. Deps. (1) £2 2s., remainder £1 1s. each.

***West Riding CC.**—Fire station, Bondgate, Otley. County A, "Bishopgarth," Westfield-rd., Wakefield. Dep. £2 2s.

FEBRUARY 6.

***Brighton CBC.**—Conversion and additions 3-5, Vernon-gdns., and 24, Windlesham-rd., into home for aged persons. BE&S, 26-30, King's-rd. Dep. £2 2s.

***York City C.**—Four shops and flats over Chapel Fields estate. City A, 8, St. Leonard's-pl.

FEBRUARY 8.

***Middlesbrough CBC.**—11 shops and dwellings, Berwick Hills. BE.

***Walthamstow BC.**—Six flats, 35-41, First-ave. Boro' A, E&S. Dep. £2 2s.

FEBRUARY 9.

***Faversham BC.**—22 houses. BS. Dep. £2 2s

***Nottingham City C.**—Spreading and levelling adjacent site at Manvers Secondary School, Carlton-rd. City E&S. Dep. £2.

***Salford City C.**—Two additional classrooms, Tootal-dr. school. City E. Dep. £1 1s.

***West Riding CC.**—Farm buildings, Corner Farm, Rawcliffe, near Goole, and alterations to buildings at Knapton House Farm, Knapton, near York. County Land Agent, Wakefield. Dep. £2 2s.

FEBRUARY 10.

Keynsham UDC.—Erection of (a) 20 houses on the Park West estate and (b) 10 bungalows on the Cameroons-close site. E&S, Council Offices, Keynsham, Bristol. Dep. £2 2s. or £4 4s.

FEBRUARY 12.

***Bexley BC.**—74 dwellings, Wickham-st./Chaucer-rd., Welling. BE&S, West Lodge, Broadway, Bexleyheath. Dep. £5 5s.

***Sheffield City C.**—Superstructure for first stage Colleges of Technology and Commerce, Pond-st. City A. Dep. £5.

***Wilton BC.**—29 flats. Potter & Hare, architects, De Vaux House, De Vaux-pl., Salisbury. Dep. £2 2s.

FEBRUARY 15.

***Beckenham BC.**—Four houses, corner of Ravenscroft-rd. and Pelham-rd. BE&S. Dep. £2.

***Brighton CBC.**—Classroom and lavatory extension, Woodingdean primary school. BE&S, 26/30, King's-rd. Dep. £3 3s.

***Chertsey UDC.**—44 houses, Fernlands-dr. E&S. Dep. £1 1s.

FEBRUARY 16.

***Bournemouth CBC.**—37 pairs of houses (four contracts), West Howe estate. Boro' A (Room 106), Town Hall. Dep. £2 2s. each.

FEBRUARY 18.

***Ventnor UDC.**—Pierhead superstructure. Basil L. Phelps, architect, 85, High-st., Shanklin. Dep. £3 3s.

MARCH 1.

***Lindsey CC.**—First instalment of secondary modern school, High Holme-rd., Louth. County A, Lincoln.

***Lindsey CC.**—First instalment of secondary modern school, Humberstone-rd., Cleethorpes. County A, Lincoln.

MARCH 11.

***Preston CBC.**—Ashton I county secondary school. BE&S. Dep. £3 3s.

NO DATE.

***East Cowes Housing Assoc.**—60 houses, Kent House estate. V. Aldridge (F), 35a, St. James's-st., Newport. Dep. £2 2s.

***Leamington Spa BC.**—Ten flats, Lillington estate. Rayner & Fedeski, architects, 28, The Parade. Dep. £2 2s.

***North East Metropolitan Reg. Hosp. Board.**—Two villas, South Ockendon Hospital. Sec., 11a, Portland-pl., W1.

***Smethwick CBC.**—Extensions, Holly Lodge girls' school. Chief Education Officer, 215, High-st. Dep. £2 2s.

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JANUARY 22.

***†Southampton CBC.** — Internal redecorations, Grammar School for Girls. Boro' A. Dep. £1. Tenders by February 15.

***†South-Western Reg. Hospital Board.**—Remodelling steam heating, etc., at Royal Devon and Exeter Hospital, Exeter. M. O. Carter, Sec., 27, Tyndalls Park-rd., Bristol, 8. Dep. £2 2s.

JANUARY 25.

***†Beds CC.**—Electric light, etc., and heating, etc., "Rookwood," New Bedford-rd., Luton. County A, Bedford

***Hayes and Harlington UDC.**—School maintenance work at certain schools. E&S.

JANUARY 27.

Manchester City C.—Director of Housing. (Bricks and Lime.)

JANUARY 29.

Bethnal Green BC.—TC. (Materials.)

JANUARY 30.

Berkhamsted UDC.—E&S. (Materials.)

Canterbury TC.—City E&S. (Materials.)

Halifax CBC.—BE. (Materials.)

Orpington UDC.—E&S. (Materials.)

Prestwich BC.—TC. (Materials.)

JANUARY 31.

Hunts CC.—County S. (Materials.)

FEBRUARY 1.

Bournemouth CB.—BE. (Materials.)

Bucks CC.—County S. (Materials.)

East Ham Corpn.—TC. (Materials.)

Newcastle-under-Lyme BC.—TC. (Materials.)

***Ormskirk UDC.**—Laying plastic floor tiling to 80 houses. S.

FEBRUARY 2.

Breconshire CC.—County S. (Materials.)

Carmarthenshire CC.—Clerk of CC. (Materials.)

Deal BC.—BE&S. (Materials.)

Pembrokeshire CC.—County S. (Materials.)

FEBRUARY 4.

Sutton and Cheam BC.—BE&S. (Materials.)

FEBRUARY 6.

Enfield UDC.—E&S. (Materials.)

Swansea CBC.—BE&S. (Materials.)

FEBRUARY 24.

Turton UDC.—E&S. Council Offices, Bromley Cross, nr. Bolton. (Materials.)

NO DATE.

Northants CC.—County S. (Materials.)

ROADS, SEWERAGE AND WATER WORKS

JANUARY 25.

***†Watford RDC.**—Footpaths, street lighting, etc., Tibbs Hill estate, Abbots Langley. Dawe, Carter & Ptnrs., 33, Clarendon-rd. Dep. £1 1s.

JANUARY 29.

Kettering RDC.—About 800 yds. main sewers, 700 yds. main, and sewage disposal works at Grafton Underwood. Pick, Everard, Keay and Gimson, engineers, 6, Millstone-la., Leicester. Dep. £2 2s.

JANUARY 30.

Ashford (Kent) UDC.—(a) Beaver outfall sewer; (b) Beaver estate roads and sewers (part I). A. Webster, AMICE, 5, North-st., Ashford. Dep. £2 2s. per contract.

Bristol CC.—Roads and sewers on Withywood housing site, part 2, contract 12. City E. Dep. £2 2s.

FEBRUARY 1.

Upton-upon-Severn RDC.—Laying of water mains, etc. S. Council Offices, Upton-upon-Severn, Worcs. Dep. £3 3s.

FEBRUARY 2.

Evesham BC.—Advance preparation of Fairfield Housing Site No. 7. BS, High-st., Evesham. Dep. £3 3s.

FEBRUARY 6.

Calne and Chippenham RDC.—Roads, sewers and waterworks for 20 houses at Lower Stanton St. Quintin. E, Bewley House, Marshfield-rd., Chippenham. Dep. £2 2s.

FEBRUARY 11.

St. Asaph RDC.—Contract 1, Bodelwyddan sewerage and Contract 2, Rhuddlan sewerage and sewage disposal. Charles J. Lomax & Son, chartered engineers, 37, Cross-st., Manchester 2. Dep. £3 3s. and £5 5s. respectively.

Teignmouth UDC.—About 850 yds. water main. J. Huxtable, MIMunE, Bitton House, Teignmouth.

FEBRUARY 13.

Rugby RDC.—Northern Parishes water supply. Contract No. 11. J. D. & D. M. Watson, MM.ICE, 18, Queen Anne's Gate, Westminster, SW1. Dep. £10 10s.

FEBRUARY 17.

Bolton CBC.—2m. gall. service reservoir. Waterworks E. Dep. £3 3s.

MARCH 8.

South Devon Water Board.—Impounding reservoir on Dartmoor at River Avon. Lemon & Blizard, engineers, 59, Tufton-st., Westminster, SW1. Dep. £21.

NO DATE.

North of Scotland Hydro-Electric Board.—Works in connection with Lower Moriston civil engineering works. Sir William Halcrow & Ptnrs., Alliance House, Caxton-st., Westminster, SW1. Dep. £5 5s.

GENERAL BUILDING WORK

(LONDON)

Friern Barnet.—SCHOOL EXTENSIONS.—County Planning Com. have given their approval to the erection of a central kitchen and dining-room at Oakleigh Primary School, Oakleigh-rd. North, N20, for UDC.

Friern Barnet.—APPOINTMENT.—H. J. Venning & Partners, 16, Gower-st., WC1, are recommended by Hsg. Com. for appointment as quantity surveyors in connection with the scheme for the erection of 14 flats at housing site No. 15, Russell-rd., and Russell-la.

Friern Barnet.—FLATS AND SHOPS.—UDC propose the development of land in Woodhouse-rd. by the erection of shops and flats. The London Co-op. Society, Ltd., 54, Maryland-st., E15, have made proposals regarding a similar development on the adjoining site.

Friern Barnet.—OFFICE.—TP permission granted to proposals by Hollyfield Printers, Ltd., Colney Hatch-la., N11, for the erection of an office and storage space at Queen's Parade-cl., N11.

Friern Barnet.—HOUSING.—Outline application by Howard Sharp, surveyor, 1285, High-rd., N20, for the erection of three houses and the modernisation of the existing dwelling house at "Melrose," 76, Friern Barnet-la., N11, has been given conditional approval by TP Com.

Friern Barnet.—FLATS.—Conditional approval has been given by TP Com. to proposals by Day (Contractors), Ltd., bldrs., 705, High-rd., N12, for the erection of four flats on land adjoining west side of No. 47, Temple-ave., N20.

Friern Barnet.—HOUSES.—Erection of nine houses on sites of Nos. 10-14, and Nos. 18 to 28, Churchway, N20, proposed by J. Lovesay (Builders), Ltd., The Lindens, N12, has been given TP permission.

Friern Barnet.—GARAGE AND SHOWROOM.—TP consent granted to the erection of a garage, filling station and showroom on site of No. 1416, High-rd., N20, proposed by T. P. Breen, Ltd., at that address.

Hornchurch.—SHOPS AND FLATS.—Proposals have been made by A. D. MacGregor, bldr., "Sheila," Moor-la., Cranham, for the erection of 10 shops with two storeys of flats over at the corner of Corbets Tey-rd. and Springfield-gdns., Upminster.

Hornchurch.—OFFICES.—TP approval has been given to the use of land at the corner of New-rd. (A13) and Manor-way, Rainham, for the erection of a block of offices. The scheme is proposed by Phœnix Timber Co., Ltd., Frog Island, New-rd.

Hornchurch.—SHOPS AND MAISONETTES.—Proposals have been made by R. J. Carter, bldr., "Priests," Havering-rd., Romford, for the erection of shops with maisonettes over at Cissbury Lodge Farm, Shepherds Hill, Harold Wood.

Hornchurch.—HOUSING ESTATE.—Plans showing the layout of their proposed housing estate at South Hornchurch have been submitted to UDC by the Elm Park Development Co., Ltd.

Kensington.—FLATS.—TP Com. propose to include the site of No. 30, Coleherne-mews within the scheme for the erection of eight flats at No. 82-84, Redcliffe-sq. Plans prepared by John Grey & Ptnrs., 17, Buckingham-st., WC2, have been approved by RBC.

Kensington.—APPOINTMENT.—The engagement of Dearle & Henderson, 123, Victoria-st., SW1, as quantity surveyors for the scheme providing for the erection of 12 flats on the sites of Nos. 61 and 63, St. Ervan's-rd. has been approved by RBC. John Grey & Ptnrs. are the architects for the scheme.

Walthamstow.—SITE CLEARANCE AND REDEVELOPMENT.—BC are to compulsorily acquire for clearance purposes the following properties and sites: Nos. 1-14 (cons.), Short-rd.; Nos. 23-41 (odd), Vallentin-rd.; Nos. 47-65 (odd), Vallentin-rd. and No. 13, Back-rd.; No. 69, Vallentin-rd. and Nos. 21-25 (cons.), Back-rd.; Nos. 2 and 6-12, Collard-rd., with No. 43, Shernhall-st.; Nos. 43, 45, 67 and 67a, Vallentin-rd.; Nos. 71, 73, Vallentin-rd.; and two sites in Back-rd. A scheme submitted by the Boro' A, E&S for the development of the area by the erection of 81 flats has been approved in principle by BC.

Walthamstow.—FACTORY EXTENSIONS.—TP permission has been granted to the extension by Duroglass, Ltd., of their factory in Blackhorse-la.

Walthamstow.—OFFICE REINSTATEMENTS.—The reinstatement of their office block in Fulbourne-rd., proposed by the Asea Electric, Ltd., has been granted TP permission.

Walthamstow.—EXTENSION OF OFFICES.—Proposals by Short and Mason, Ltd., for the extension of their office block in Macdonald-rd. has been given TP approval.

Walthamstow.—FACTORY EXTENSIONS.—TP consent has been given to proposals by St. Andrew Mills, Ltd., for the extension of their factory in St. Andrews-rd.

Wood Green.—FLATS.—Sketch plans submitted by BE for the erection of six flats on land at the junction of New-rd. and Ellenborough-rd. have been recommended for approval by Hsg. Com. BE has also submitted sketch plans for the erection of one house and six flats on land at Granville-rd., and has reported that it would be possible to erect eight flats on a portion of the site "AO."

(PROVINCIAL)

Bacup.—TC propose erection of 165 houses at Tunstead-rd. estate.

Bootle.—TC recommended to apply for sanction to borrow £22,924 for erection of branch library in Northfield-rd., Orrell.

Bowland (Lancs).—RDC approved erection of block of flats at Newsholme, for Desmesne Estates, Ltd.

Brierley Hill.—TC propose conversion of 50 Duplex houses into 3B type houses. Approved draft plan by S for central depot for all departments on part of Leys Tip Brockmoor, £50,000 est. Approved conversion of Hawbush House into community centre.

Brighouse.—BC to negotiate with Gregory Construction Co., Ltd., for erection of 52 dwellings at Cain-la. estate.—Approved: Amended plans for offices at Halifax-rd., Hipperholme, for Bull Green Coachworks, Ltd.; rebuilding "Black Horse Inn," Clifton, for R. Whittaker & Son.

Burnley.—BC propose erection of further 330 houses, commencing March, 1954.

Bury.—Trustees of Patmoss Methodist Church, rear Bury, propose erection of church to replace building at foot of Peel Brow.

Chester.—RDC to erect 380 houses in 1954 programme.

Chesterfield.—TC propose crematorium and ancillary buildings at Brimington.

Chesterfield.—RDC approved erection of 28 houses on part of former Offley-pl. estate, Old Brampton, for F. T. Fretwell, Chesterfield.—Erection of factory for processing confectionery and dairy products at Frecheville for E. H. Adsetts.

Cockermouth.—UDC to invite tenders for erection of flats at Sullart-st.

Darlington.—EC approved sketch plans for proposed Arthur Pease prim. sch. to be built under 1954-55 building programme. Boro' A, E. A. Tornbohm, Central-bldgs., Darlington.

Durham.—CC to place contracts for laundry at Dinsdale Park Residential sch. and canteen scullery at Shildon boys' mod. sch. Cty. A, G. R. Clayton, Court-la., Durham.

Durham.—Durham Div. Coal Brd. (No. 4 area) Coundon, Bishop Auckland, to erect ambulance room and offices at Brusselton Colliery.

Essex.—Magistrates Court Com. propose erection of two court houses at Harlow New Town on site next to proposed new police station. Estimated cost is £43,000.

Farnworth.—BC to negotiate tenders for erection of 22 houses at Buckley-la, No. 1 site, 24 at Buckley-la. No. 2 site, eight at junction Buckley-la./Tennyson-rd., 14 and 32 at Plodder-la. South, No. 1 site.

Gateshead.—Building programme of North-Eastern Trading Estates, Ltd., this year includes building six new factories and extending 13 others on Team Valley Trading Estate, Gateshead. These will cover area of 280,000 sq. ft.

Golborne.—UDC to invite tenders for 80 houses in 1954 programme.

Halesowen.—TC to sell site on Fatherless Barn

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estate to W. A. Adams, Rowley Regis, for erection of church and Sunday-school.

Halifax.—Licence for £45,000 issued to L. Harris, Ltd., for extension to factory.

Hartlepool.—North-Eastern Railway Cottage Homes to erect six bungalows in Earl-st., and plans approved. Plans by A. Newton Thorpe, Architects' Dept., Civil Engineers' Office, British Railways, York.

Huddersfield.—TC to invite tenders for home for aged on Bradley estate.

Ipswich.—900 ft. long factory building to be erected this year by Cocksedge & Co., Ltd., constructional engineers, for Ransomes Sims & Jefferies, Ltd., on the 265-acres Naston Heath site.

Jarrow and Hebburn.—Co-op. Society to start early this year with building of new bakery at Calf Close-la., Jarrow, est. total cost £125,000.—MoW granted building licence £85,000. Architects, CWS Architects' Dept., 90 Westmoreland-rd., Newcastle-on-Tyne.

Jarrow-on-Tyne.—Site sought for Baptist church in Simonside area.

Kirkby-in-Ashfield.—UDC received allocation of 80 houses for 1954 programme.

Lanchester.—RDC to erect 20 houses at Burnhope.

Lytham St. Annes.—BC approved erection of 20 bungalows at Church-rd., for Clifton (Lytham) Housing Assoc.; five bungalows at Smithy-la. for F. Hunt; six bungalows at Church-rd. for J. Halstead, Ltd.; eight houses at Grenville-ave. for A. Ingham & Son; eight bungalows and garages at St. Thomas-rd. for Mr. T. T. Bird; five bungalows at Smithy-la. for Hunt (St. Annes), Ltd.

Manchester.—TC received approval for erection of more than 700 houses on site near Wilmslow-rd. and Stanley-rd., Handforth.

Matlock.—UDC received allocation of 80 houses in 1954.

Middlesbrough.—Plans being prepared by Percy Baines & Son, 7, Brentnall-st., Middlesbrough, for erection of church in Woodlands-rd., for St. Stephen's Church Council.—J. P. Allen & Hill, Tankerville-ter., Newcastle-on-Tyne, appointed quantity surveyors, and Cairns & Byles, Osborne-ter., Newcastle, consulting engineers, for proposed Longlands County College, for Middlesbrough EC, cost £180,000.

Morpeth.—RDC this year to build 30 traditional and 100 non-traditional houses.—Council considering erection of old people's houses at Broomhill.

Newcastle.—Plans approved for ear, nose and throat ward unit at Hartlepools Hosp. for Newcastle Reg. Hosp. Board, "Dunira," Osborne-rd., Newcastle-on-Tyne. Board's Chief A, P. H. Knighton, MBE, ARIBA.

Newcastle-on-Tyne.—City C received permission to go ahead with second stage of £200,000 plan for bus depot in Slatyford-la. Second stage will cost £38,000. General contractor for the whole scheme is G. Bainbridge, 205, Westgate-rd., Newcastle. City A, G. Kenyon, 18, Cloth-market, Newcastle.

Northumberland.—EC approved estimates £1,391,820 for sch. buildings. These include new sch. for forest village of Byrness, cost £8,000, to be nucleus of bigger sch. when more houses are built. Plans by Cty. A, C. C. Brown.

Northumberland.—EC approved final plans and estimates at £164,000 for proposed Whitley Bay new mod. sch. Cty. A, C. C. Brown, County Hall, Newcastle-on-Tyne.

Otley.—UDC approved erection of additional 90 "No Fines" houses at Western-la. site.

Otley.—West Riding CC to invite tenders shortly for erection of new fire stn.

Peterlee.—Development Corp. had plans approved for 150 more houses in the new town.

Richmond (Yorks).—RDC to apply for sanction to borrow £348,000 for building 234 houses in their area.

Scunthorpe.—County A submitted scheme to County EC for second instalment of new North Lindsey Technical College to include chemistry and metallurgical block, students' common-room and admin. offices, estimated cost £127,500.

Skelmersdale.—UDC approved layout for 173 dwellings at Manor House Farm site.

Somerset.—1954-55 building programme proposed by CC to total £1,405,238 for 328 schemes. Six of these are for new schs., est. cost £489,000.

South Shields.—Board of Trade received inquiry from firm wishing to start factory at South Shields. No details of proposed factory yet given.—Elsey & Gibbons, Ltd., plumbing engineers, to erect factory at Mill Dam.—Wrights Biscuits, Ltd., applied for two-acre site for proposed extensions.

South Shields.—Corp's Health Services Com. approved in principle construction of clinic and ambulance stn. at Boldon-la., at £32,550.—Also proposed to erect in same area communal hall, flats and branch library. BE, John Reid.

Spennymoor.—UDC seek confirmation of clearance orders involving 150 houses at Byers Green. It is proposed to redevelop the land on modern lines.

Stalybridge.—BC received allocation of 104 houses for 1954 programme.

Stanley (Co. Durham).—W. B. Reid & Co., Ltd., The Leazes, Upper Claremont, Newcastle-on-Tyne, negotiating for site at South Stanley, on which to build licensed premises.

Stantforth.—RDC propose six houses at Bowes, near Barnard Castle. Council's A, H. B. Richardson, Darlington.

Stockton-on-Tees.—Detailed plans and quantities to be prepared by RDC architect for proposed combined shops and flats to be erected at Preston.

Sutton-in-Ashfield.—UDC propose erection of 64 houses on Carsic-la. estate scheme No. 6, £88,950 est.

Swinton.—BC appointed Bernard Taylor and Assoc., 9, Market-pl., Macclesfield, as architects for erection of shops at Clifton Neighbourhood unit.

Tyldesley.—UDC received allocation of 78 houses for 1954 programme.

Tynemouth.—William Stockdale, 73, Howard-st., North Shields, architect for proposed office alterations in Norham-rd. for Monkseaton Sheet Metal Works, erection of Congregational Church in Bolam-ave., and factory additions in Norham-rd., for Dukes & Markus, Ltd.—BE, D. M. O'herlihy, 16, Northumberland-sq., North Shields, preparing plans for development of Chirton Grange North housing estate.

Wallsend.—Clelands (Successors), Ltd., shipbuilders, to erect prefabricating shed in Potter-st. to plans by L. J. Mouchel & Partners, 9, Ellison-pl., Newcastle-on-Tyne.—William Leech, Ltd., builders, 2, Clayton-st., Newcastle-on-Tyne, to erect 26 houses on Sunholme estate, Wallsend.—Monitor Patent Safety Devices, Ltd., Kings-rd., Wallsend, purchased land at junction of Kings-rd./Coast-rd., for industrial developments.

West Riding.—CC propose new sub-divisional police headquarters at Shipley, Ripon and Wetherby.

Whitefield.—UDC to erect 30 bungalows and 20 houses on site north of Rusford-dr.

Whitley Bay.—Haverys, Ltd., The Side, Newcastle-on-Tyne, to erect semi-detached houses at The Links, Northumberland.—CC to erect child welfare centre in Whitley Bay to plans by Cty. A, C. C. Brown, County Hall, Newcastle-on-Tyne.—Castles, Ltd., builders, Closefield-gr., Whitley Bay, to erect 20 houses on Earsdon Grange estate.—H. Jewels, 55, Wembley-ave., Whitley Bay, proposes houses on same estate.

Wigan.—Manchester Reg. Hospital Brd. approved scheme for conversion of Isolation Block at Wigan Infirmary into orthopædic clinic and resiting new habilitation and physiotherapy department.

Worksop.—TC considering erection of municipal offices and Town Hall. Architects, Elder & Crowe, London.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Billingham.—Erection of 109 houses on Roseberry-rd. housing site No. 7: *Cecil M. Yuill, Ltd., Villiers-st., West Hartlepool, £150,143 (subject to MOH&LG approval).

Birmingham.—Erection of Greston inf. sch., for EC: *J. R. Deacon, Ltd., Lombard-st., Lichfield, £45,765.

Boston.—Erection of 100 houses on the Wood Farm housing site. *H. H. Adkins, £124,030.

Bredbury and Romiley.—Provision of 140 Watt Sodium Vapour street lighting along trunk road A.560 within the urban district: *General Electric Co., Ltd., Magnet House, Victoria Bridge, Manchester.

Bridgnorth.—10 houses at Ditton Priors, for RDC: *W. Sharratt, Ltd., Wolverhampton, £17,017.

Chadderton.—Erection of a new branch library at junction of Whitgate-la. and Broadway, for UDC: *Haldean Building Co., Ltd., Middleton.

Chester.—12 houses at Guilden Sutton, for RDC: *Wilson & Harrison, Ltd., Winsford, £15,230.

Coventry.—Erection of the proposed Our Lady of the Assumption RC prim. sch.: *G. W. Deeley, Ltd., 27, Avon-st., Upper Stoke, Coventry, £45,717.

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Coventry.—Houses for TC:—Three 11-storey blocks of flats at Tile Hill neighbourhood unit: *Geo. Wimpey & Co., Ltd., London, £231,923; 18 flats at Halls Farm estate, Stoke Aldermoor: *F. Bratby and Sons, 44, Mellowdew-rd., Wyken, Walsgrave-on-Sea, £25,695.

Doncaster.—Houses for BC:—14 at Cantley estate, Stage 3: *Thos. E. Wright, 84, Ardeen-rd., £17,967; eight houses and three bungalows: *Rushton Contractors, Ltd., Dorchie Wong-la., Tickhill, £13,996.

Eston.—Erection of 24 houses on the Crossbeck estate, for UDC: *C. W. Bell, Ltd., High-st., Eston.

Eston.—Erection of 16 bungalows on the Redcar-rd. East housing estate, for UDC. S. N. C. Harrison, Normanby-rd., South Bank-on-Tees: *A. Wilkinson, Ltd., Bolckow-rd., Grangetown-on-Tees.

Hartlepool.—Erection of 22 houses in Davison-dr., for TC. BE, J. H. Wood: *Direct Labour.

Hartlepool.—Erection of 12 houses, for TC: *Rennie & Son, Regent-sq., Hartlepool, and 14 houses: *Atter & Davison, Bruce-cres., Hartlepool.

Holytown.—Erection of houses at Sunnyside housing site, for Lanarkshire CC. Samuel MacColl (A), Housing Architect, County-bldgs., Beckford-st., Hamilton West. Excavation, brick, building and allied works: *Andrew Wright & Sons (Builders), Ltd., Blantyre. Joinery, carpentry and allied works: *Samuel MacIllroy, Mossend. Roof tiling and allied works: *John Young, Ltd., Bellshill. Plumbing, sanitary engineering and allied works: *W. C. Bell & Son, Ltd., Bellshill. Plaster, lathing and allied works: *George Bryson & Co., Ltd., Motherwell-Wishaw. Electrical fittings installation and allied works: *William Y. MacAdam & Co., Ltd., Hamilton. Painting, decorating and allied works: *William MacDougall, Bellshill.

Hull.—Erection of 200 houses on part of the new Longhill estate at Hull, for Corp.: *F. Bilton, Ltd., £239,787.

Kirkby-in-Ashfield.—Construction of a relief surface water sewer, for UDC: *Bagguley & Barker, Nottingham, £18,783.

London.—Work has started on the new headquarters for Industrial Newspapers, Ltd., 49, Wellington-st., WC2, which is being erected on a corner site in John Adam-st., in the Adelphi. The architects are Lewis Solomon, Son & Joseph, 21, Bloomsbury-way, WC1. *F. G. Minter, Ltd., 4, Buckingham Gate, SW1.

¶London (Air Ministry).—Contracts to value of £500 or over for week ended January 9:—

Construction of Servicing platforms and hardstandings: Highways Construction, Ltd., Iddesleigh House, Caxton-st., London, SW1. *Building Work*: A. Monk & Co., Ltd., Padgate, Warrington, Lancs.; Ringmer Building Works, Ltd., Ringmer, Lewes, Sussex; Holborow & Sons, Ltd., Tetbury, Glos.; Bury Building Co., Ltd., Canons Bridge House, Bury-st., Ruislip, Middx.; John Laing & Son, Ltd., Dalston-rd., Carlisle.

Resurfacing Work: General Asphalte Co., Ltd., Grafton-rd., London, NW5; George Wimpey & Co., Ltd., Hammersmith-gr., London, W6; Amey's Asphalt Co., Ltd., Sutton Courtenay, Abingdon. *Electrical Installation*: F. H. Wheeler & Co., Ltd., Regal-bldgs., Oxford-rd., Manchester; The Electrical Equipment Co. (Leicester), Ltd., 106, London-rd., Leicester.

London (British Railways).—Contracts placed by the Eastern Region of British Railways:—Remedial measures to slip in Wrawby Cutting: *Bagguley & Barker, Ltd., Midland Bank-chbrs., 65, Arkwright-st., Nottingham. Stabilisation of earthworks between Pitsea and Benfleet: *Rotinoff Construction, Ltd., 125, Pall-mall, London, SW1.

LCC.—The undermentioned contracts exceeding £2,500 in value have been placed by LCC between December 17 and 31:—

Repairs and replacement of wire screens at education playing field at Goresbrook-rd., Becontree: *W. H. Gaze & Sons, Ltd., £2,873. Repairs after war damage, maintenance repairs and redecoration at Sydenham cty. sec. sch.: *Norman Wright (Builders), Ltd., £9,290. Repairs and redecorations at Pakeman prim. sch., Islington: *O. H. Groves & Co., Ltd., £7,395. Reinstatement of, and ground works at, the education playing field at Goresbrook-rd., Becontree: *Kinman (Contractors), Ltd., £12,195. Repair and repainting of fire escape staircases at Great Stony boarding special sch., Ongar, and Ardale approved sch., Essex: *T. W. Palmer & Co. (Merton Abbey), Ltd., £5,732. Provision of broadcasting equipment for comprehensive schs.: *Clarke & Smith Manufacturing Co., Ltd., £8,568. War damage and maintenance repairs and redecoration at City Day College: *Cobby & May, Ltd., £8,806.

LCC.—Supply of 150 lifts for residential flats being built in the London area: *The Express Lift Co., Ltd., Abbey Works, Northampton, £329,600.

London (Metropolitan Police).—Contracts placed by Metropolitant Police:—Erection and completion of second contracts at Kennington-rd. police stn.: *Griggs & Son, Ltd., £96,879. Internal redecorations at Byng House: *R. Mansell, Ltd., £3,476.

¶London (MoW).—Contracts placed by MoW for forthnight ended December 26, 1953:—

London: Mayfair Branch Post Office, Higham House, Chesterfield-gdns., W1. Alterations to form branch PO, E. Gosling (Builders), Ltd., 81/85, Whitton-rd., Twickenham, Middx: 10, Whitehall-pl., SW1, External decorations, Sykes & Son, Ltd., 8, Essex-st., Strand, WC2. *Buckinghamshire*: Post Office Training School, Block "H," Bletchley Park, Bletchley, Bucks, Adaptations and additions, Webster & Cannon, Ltd., 42, Cambridge-st., Aylesbury. *Devonshire*: MoT Coastguard Station, Prawle Point, Addition of bathrooms, J. W. C. Scoble & Son, Ltd., Wellingford-rd., Kingsbridge, Devon. *Gloucestershire*: Parkend Remploy Factory, Lydney, Extension of factory, William T. Nicholls, Ltd., St. Paul's-rd., Gloucester.

Lanarkshire: Bishopbriggs, Glasgow, Erection of

telephone exchange, Findlay & McGeechan, Ltd., 1097, Tollcross-rd., Glasgow, E2. *Lancashire*: M/Materials, Lowerhouse Factory, Padiham, External painting, John Akers, 62, Seymour-st., Chorley. *Northumberland*: Ministry of Works (Controller of Supplies), Plenmeller Colliery, Haltwhistle, Northumberland. Erection of boiler-house and fuel store, John Jackson & Sons, 72, Corporation-st., Newcastle-on-Tyne 4. *Yorkshire*: Ministry of Pensions, Handsworth-rd., Sheffield. Adaptations to paint shop, R. S. Hutchinson, Ltd., 430, London-rd., Sheffield; Ministry of Supply Depot, Harrogate-rd., Yeadon. Internal painting, Dearden Bros., 58, Chapeltown-rd., Leeds 7; Ministry of Food, Cold Store, Knaresborough-rd., Goldsborough. Asphalting main roof, Northern Asphalt & Roofing Works Co., Ltd., 253, Cardigan-rd., Leeds 6.

†London (MoW).—Contracts placed by MoW during week ended January 2:—

Berkshire: Ministry of Works, TOBI, Whiteknights Park, Reading, internal decorations, Fields, Ltd., 248, King's-rd., Reading, Berks. *Flintshire (Wales)*: MH No. 3 Polish Hospital, Penley, internal redecorations, Lloyd Evans & Son, Ltd., 23, Smithfield-rd., Wrexham. *Hampshire*: Branch PO, Allaway-ave., Paulsgrove, Portsmouth, new shop front, counter, fittings, etc., Harris & Sheldon, Ltd., 31, Stafford-st., Birmingham, 4.

Lancashire: County Court, Fifth Floor, India-bldg., Liverpool, adaptations for court, Waring & Gillow, 9-19, Bold-st., Liverpool, 1. *Surrey*: Morden, erection of postmen's delivery office, J. Carmichael (Contractor, Ltd.), 331, Trinity-rd., Wandsworth, SW18: Foot and Mouth Research Institute, Pirbright, erection of sewage disposal works, M. J. Gleason (Contractor, Ltd.), Haredon House, London-rd., North Cheam, Surrey. *Westmorland*: Postal Sorting Office, Windermere, alterations and additions, G. F. Martindale & Son, Ltd., Entry-la., Kendal, Westmorland.

†London (War Dept.).—Works contracts placed by WD during week ended January 2:—

Leicestershire: Painting and decorating, A. H. Taylor (Nottingham), Ltd., Attenborough. *Glamorganshire*: Building, N. E. James, Cardiff. *Merionethshire*: Miscellaneous, G. Middleton & Sons, Towyn. *Essex*: Painting and decorating, Donald Humberstone & Co., Ltd., Louth. *Middlesex*: Roads Construction, W. & J. Glossop, Ltd., London, W6.

Hampshire: Roof repairs, The Excel Asphalte Co., Ltd., London, W6. *Wiltshire*: Roofing work, C. Pether & Sons, Ltd., Burford. *Hampshire*: Painting, F. Labbett & Sons, Nottingham. *Dorsetshire*: Building, Burt & Vick, Ltd., Poole. *Wiltshire*: Building, Farrans, Ltd., London, W1. *Co. Antrim*: Building, Connor & Beattie, Ltd., Belfast.

London, W1.—Reconstruction after war damage of the Burlington Arcade, London W1, at a cost of over £30,000. Ernest Bates & W. G. Sinning, ARIBA, architects, Rolls-chors., 89, Chancery-la., WC2. Pritchard, Williams & Hunt, quantity surveyors, 40, Furnival-st., EC4: *Sir Robert McAlpine & Sons, Ltd., 80, Park-la., W1.

Marshland.—Work for RDC: Six houses and four bungalows at Clenchwarton, *Mr. J. L. Boddy, Dunton, £11,631. Four houses and six bungalows at Outwell, *H. E. Means, Ltd., £10,894. 12 houses and eight bungalows at Terrington St. Clement, *Mr. A. J. L. Boddy, £22,783. Six houses and four bungalows at Tilney All Saints, *Mr. A. J. L. Boddy, £11,352. Ten houses at Tilney St. Lawrence, *Mr. A. J. L. Boddy, £12,282. Four bungalows at Churchla., West Walton, *Mr. H. F. Mann, Elm, £4,110. Eight bungalows at Small Lode, Upwell, *Mr. A. J. L. Boddy, £7,907. Ten bungalows at Walpole Cross Keys, *Norman Bros., Elm, £10,233.

Seaham.—Erection of 120 houses on the Westlea estate, for UDC. Plans by the S: *Direct Labour.

South Kesteven.—Erection of 32 houses on the Morton site (£48,398), and 20 houses at Deeping St. James (£29,204). †Geo. Wimpey & Co., Ltd.

South Shields.—Erection of 100 "Kingston" houses, for TC. BE, John Reid: *Myton, Ltd., Hull.

Swinton and Pendlebury.—58 houses at Clifton estate, for TC: *Direct Labour.

Wadebridge (Cornwall).—Erection of a reservoir at Bear's Downs, Cornwall, for RDC: *R. Costain, Ltd., £29,000.

Wakefield.—106 houses and 36 flats at Kettlethorpe estate, for TC: *Harlow & Milner, Ltd., Warren Yard, Warrengate, Wakefield.

Wallasey.—Erection of kitchen, dining-room at Oldershaw high sch., for EC: *H. G. B. Construction Co. (Liverpool), Ltd., Super Buildings, Hoylake-rd., Moreton, £6,100.

Wallasey.—Houses for BC at Site P6: *J. L. Rawsthorpe & Co., Belvedere Sawmills, £48,158 (36); *Wm. Thornton & Sons, Ltd., 39, Wellington-rd., Liverpool, £30,487 (15 flats and 17 houses); *Joseph Tate & Sons, 241, Wallasey-village, £19,026 (eight houses and eight bungalows).

Wimbledon.—Repairs, The Firs, Atkinson Morley Hospital. Adams, Holden and Pearson, architects, *Frank R. Freeman, Ltd., 13-14, Chapel-st., NW1.

Wolverhampton.—72 flats at Primrose-ave. site, Bushbury: *Geo. Wimpey & Co., Ltd., London, £103,871; further 100 dwellings at Tettenhall site No. 3: *Direct Labour.

Workington.—Work is in hand on the construction of a battery of coke-ovens for the Workington Iron & Steel Co., Ltd. Mr. G. F. Strang is the company's chief E: *Woodall-Duckham Construction Co., Ltd., London, SW3.

Worksop.—40 houses at Kilton Hill, for TC: *Morris & Oldfield, Ltd. (20); *J. J. & R. A. Jackson, Ltd. (20).

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